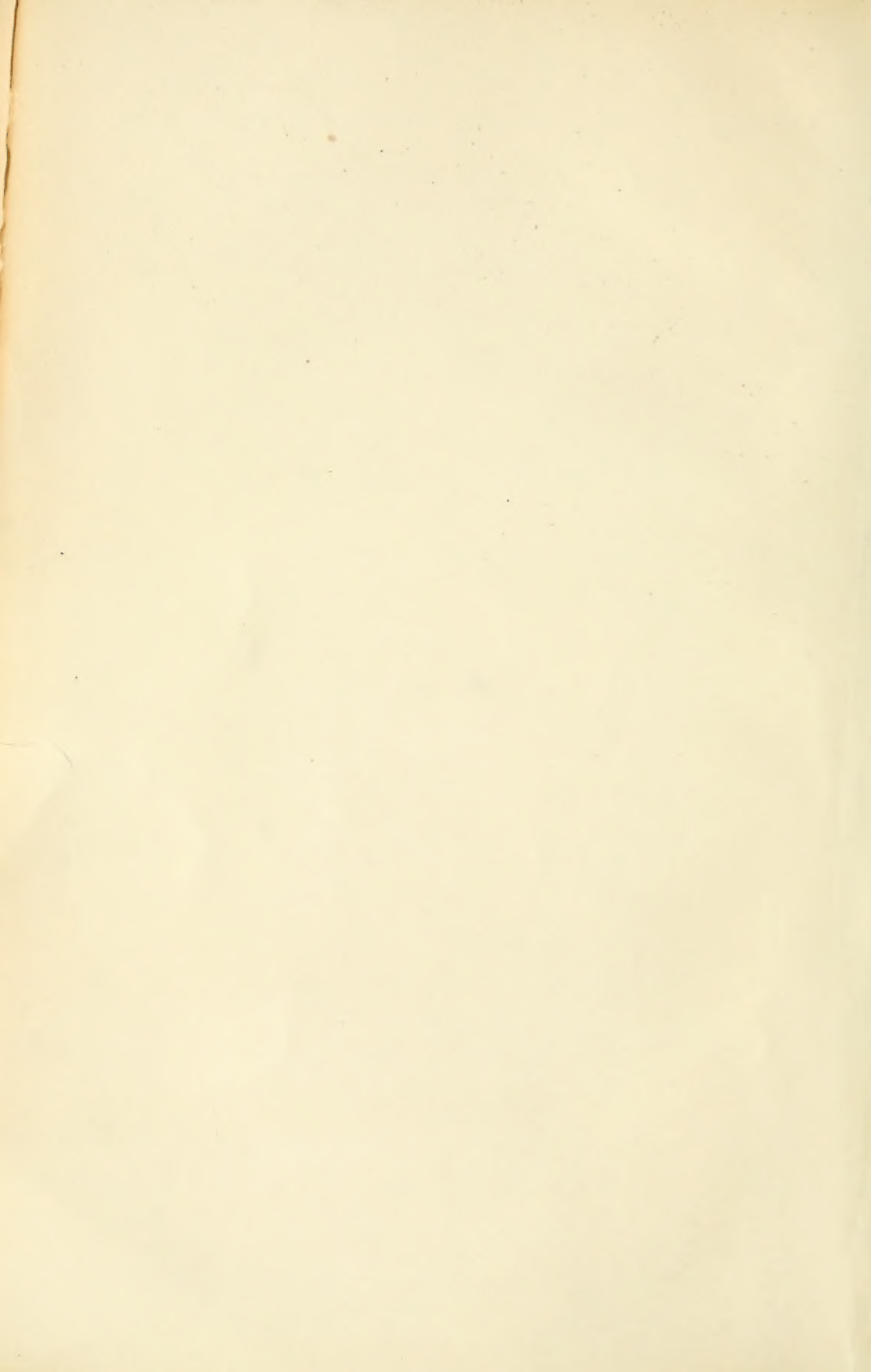


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# ORAL HEALTH

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1913.

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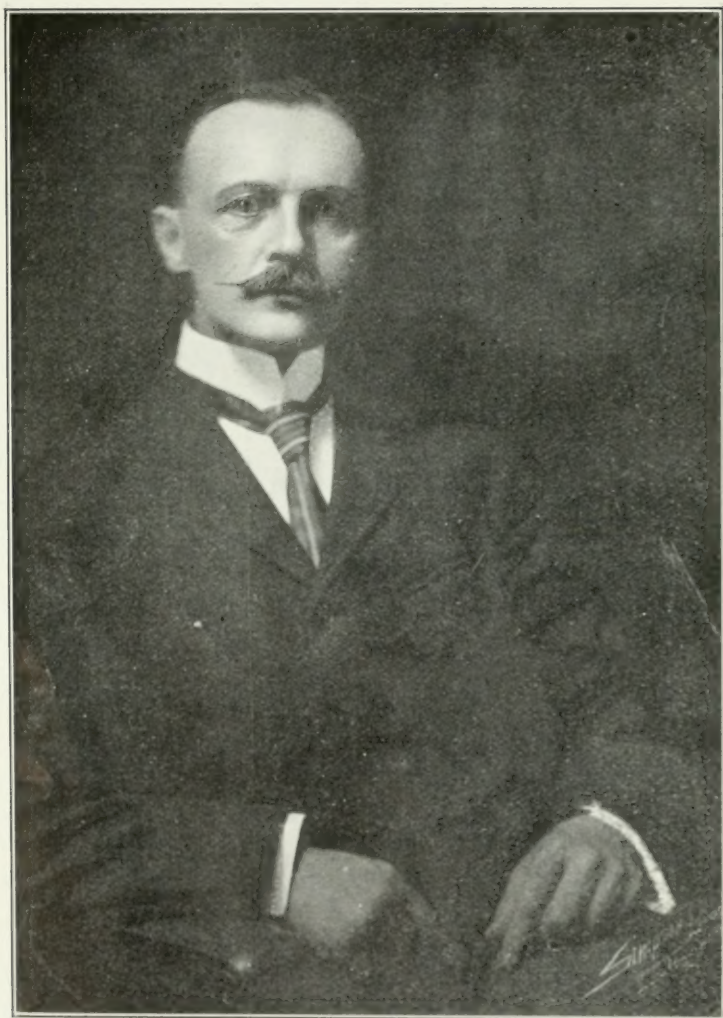
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### TAKE TIME TO LIVE.

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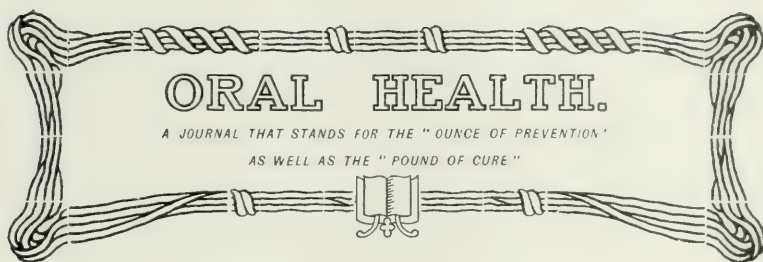
More time is one of a very few things that nobody can get. You can neither buy, beg, nor lose your quota of time. No matter how shamefully you misuse one hour, another undeviatingly follows. The thing to do, then, is to cease wishing for the impossible, and to realize that if you work, let us say, eight hours, sleep seven or eight, you still have eight or nine hours a day in which to live, with mind as well as body.—*Arnold Bennett.*



DR. CHAS. A. HODGETTS

Medical Supervisor, Conservation Commission, Ottawa





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Vol. 3

TORONTO, JANUARY, 1913.

No. 1.

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*A Federal Department of Health.*

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*Public Health from the National Standpoint.*

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BY CHAS. A. HODGETTS, M.D., D.P.H., L.R.C.P. LOND., F. R.  
SAN. I.

Medical Adviser, Commission of Conservation, Ottawa.

THE fathers of Confederation apparently knew little, and certainly thought less, of health matters than they did of the political and economic factors which make for national existence. This is not to be wondered at, for in the early sixties of the nineteenth century but little attention was given to health questions by the governments of the older countries. As an indication that health questions were considered as coming under the purview of the Federal Government, it is of interest to note, as it is of importance, from the standpoint of those who believe that public health is a national question, that for several years following Confederation in 1867, public health questions were handled directly by the Government at Ottawa. Unfortunately for the people of Canada, the question was relegated to the Provinces, not by any direct legislation, but by the inertia which existed at headquarters, or

rather, by the failure on the part of the Government then in power to fully realize that health was as important as agriculture, commerce and the many other activities which go to make for the greatness of a people.

The position of health affairs in the Dominion at the present time, is that the Dominion Government controls the quarantine service, at the head of which is the Director-General of Public Health, who is an officer under the Minister of Agriculture; the so-called medical inspection of immigrants is in the hands of the Minister of the Interior; while the inspection of food is by statute supposed to be administered from the office of the Minister of Inland Revenue.

It can readily be imagined what a high state of efficiency can be secured under this elaborate system of divided responsibility in the important branches of public health work. Any one familiar with departmental administration can understand how medical and technical work such as is called for can receive but scant support, nor can the officers efficiently act as units of a service when serving under a Deputy Minister who is charged with the management of a department in which most of his time is taken up with matters not in the least related to the health of the people of this great and growing country. For efficiency in any department either of civil, municipal or governmental life, it is essential that kindred work should be placed under the direct control and oversight of one who is an expert in the particular class of work to which he is assigned. What successful business house or corporation would think of making a good lawyer the executive head of a department in engineering, and expect at the same time, to secure that hearty co-operation of staff which would result in efficiency? In practice, we find this is not the case; on the contrary, the best man in each branch of work is chosen, executive ability being always considered. He is given a free hand to organize his department into a service which will give the best returns for the money expended.

A glance at the situation of the Federal Government will reveal the fact that in every instance the medical work of each department is a mere side issue to a mass of other official work handled by the Deputy Minister who, when he comes to deal executively with a medical subject, is handling something of which he has no technical knowledge and, therefore, cannot be expected to pass thereon in an intelligent manner.

It is safe to say that in no other branch of the Federal Government service requiring technical knowledge, is there such a complete absence of co-ordination and organization as there is in respect to health. Yet public health administration is the most difficult of all and requires for its efficient working the organizing of a medical service in which promotion depends upon efficient service. This lack of organization means inefficient service, and consequently a financial loss to the country. The former is more important, as the results are lasting and widespread; for if the health of the people of to-day is not preserved and bettered, the loss will be to the Canada of to-morrow.

So much has been said by those who do not understand the question that at the present time there is a danger that the very object sought for may not be secured.

What is within reason and will give the desired results is not so much a Minister of Health as the collecting together of the scattered and isolated medical and health units which are to be found in the federal service, and co-ordinating them under a Deputy Minister of Health. There is fully enough work even now for the employment of such federal officer, and if he is given that which the Commission of Conservation of Canada has recommended, viz., a federal laboratory, which would be the workshop and centre around which and in which the medical members of the staff could gather, work, and be trained, it is not indulging in any idle prophecy to say that there would be such a stimulus given to health work throughout the whole Dominion as has never been witnessed under the present method of disorganization.

The work of federal health need not, indeed cannot, overlap that now carried on by the various provinces. It should be co-ordinated with that of all the provinces, having for its object the bettering of the health conditions of the people, the prevention of sickness and suffering and the carrying on of research work in the interests of our people.



## *Health Authorities Agree in Urging a Canadian Federal Department of Health.*

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**O**RAL HEALTH has interviewed a great number of Canadian health authorities in regard to the necessity and possible service of a Federal Department of Health. The opinion expressed has been favorable in every case. We publish below a few of the many expressions that have been received:

Office of Board of Health, Manitoba.

Winnipeg, 16th Decr. 1912.

Editor ORAL HEALTH, Toronto, Canada.

Dear Sir,—I am in receipt of your letter of the 13th inst., and in reply beg to say that the Board of Health is strongly in accord with the idea of constituting a Canadian Department of Health, and feel confident that this Province will co-operate most cordially should such a step be taken.

Yours truly,

E. M. Wood, Secretary.

Office of Board of Health of the Province of Quebec.

Montreal, December 14th, 1912.

Editor of the ORAL HEALTH, Toronto.

Dear Sir,—I beg to acknowledge receipt of your favour of the 13th instant.

In looking up the minutes of the meetings of our Provincial Board, I find that on the 19th May, 1899, the Board took occasion of the appointment of a Federal Director-General of Public Health, to express to the Federal Minister of Agriculture the hope that the said appointment was to mean that all sanitary services scattered in the various departments at Ottawa were to be unified, a unification that the Provincial Board believe to be most desirable.

Subsequently, on the 18th April, 1903, the Provincial Board, being aware that the reorganization of the federal

health service was agitated in the House of Commons, passed the following resolution which was duly transmitted to the Federal Government.

“Resolved that the Board of Health of the Province of Quebec would see with pleasure the creation of a Federal Department of Health in which would be united, under a Deputy-Minister, all services relating to health matters, which are actually scattered in various departments.”

Yours sincerely,

ELZEAR PELLETTIER, Secretary.

Chief Office of Health, Province of Ontario.

Dr. J. W. S. McCullough, Chief Officer of Health, Province of Ontario, when interviewed by ORAL HEALTH said that a Federal Department of Health was necessary, giving the following as a few of the reasons for the establishment of such a department.

“A Federal Department would be of assistance in providing antitoxin for diphtheria, typhoid vaccine, etc., at low rates. The price of the former is, at the present time, exorbitant. No department would be able to more effectively control interprovincial and international water way pollution. It would help to co-ordinate the preventive measures all over Canada, pave the way for some national effort in the control of tuberculosis, and by putting the examination of immigrants on a sensible basis (that of thorough inspection at the port of embarkment) prevent the influx of diseased, mentally deficient and undesirable population.”

“A properly conducted Federal Department of Health will be unlikely to interfere with the provincial health departments. There is plenty of work for all of them.”

When asked if in his opinion it would be advisable for such a department to appoint a Dental Inspector of Immigration, Dr. McCullough replied that medical inspection of immigrants should of course include inspection of the teeth as well as eyesight, hearing, etc., etc.

## *Medical Council of Canada.*

### *Notes on the Canada Medical Act.*

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By E. A. P. HARDY, M.B. (TOR.), M.D., M.C.P. & S., TORONTO.

**F**OR many years after the capture of Quebec, practically all the physicians and surgeons who followed their calling in Canada were retired or active Army officers. These had graduated in England, and their degrees entitled them to practise in the Empire, as it then existed. Gradually, however, many of the colonies obtained self-governing rights, and among these rights was the power to control and direct medical education; and those who practised that profession, and then the Governor-General of Canada, was given the power to grant licenses to practise medicine to those who had shown proper credentials. Later still, certain Universities were granted power both to confer degrees and also licenses to practise, and this course was followed for many years, until abuses crept in, were noted, and efforts made to reform these conditions.

The principal reform made was to take away from the educational bodies the power to confer licenses to practise, and to place such power in the hands of Provincial Medical Councils, which were bodies composed of medical practitioners in good standing, elected by the profession at large, and certain appointed representatives of the educational institutions. With differences in details only, this is the system in all the Provinces of Canada to-day, and for many years each Province has had its Medical Council, which controls and directs all medical education within its boundaries, and confers licenses to practise medicine, surgery, and midwifery on those who have fulfilled the requirements demanded by the Council as to matriculation, number of years passed in study, and standing at the necessary examinations. The Councils also have power to remove a practitioner's name from the rolls for sufficient reason.



From this short sketch it can be understood that each Council was independent of all the others in the Dominion, and had the power, and exercised it, to prevent a licentiate of another province from practising medicine within the area of its jurisdiction. Thus, a practitioner living near the boundaries of two provinces was, and is, compelled to obtain licenses from each of the provinces if he wished to be able to practise in both.

During all these years the Western provinces were growing in wealth and population, and as there were no medical colleges west of Ontario, and the graduates of the Eastern colleges were compelled to undergo the tests called for by the Western Provincial Boards. Also, during this time, there arose a feeling of community of interests and purposes between the different provinces, and this soon extended to the members of the medical profession, who gradually became possessed of the idea that a physician, declared capable of practising his profession in one province, was capable of doing so in all the provinces of the Dominion, and should be allowed to do so.

At the meetings of the Medical Associations this subject was discussed at length, and as was natural, several plans were formulated, two of which seemed possible of fulfilment, viz.: (1) reciprocity between the Provincial Boards, by each province making an agreement with each and every other province, and by which licentiates of one province were to be allowed to practise in all the other provinces; (2) the formation of a Dominion Medical Board, which would have the power to grant licenses which would permit the holder to practise in any province.

The latter plan seemed more easy of accomplishment, and the movement, once started, soon took on definite shape, though the many difficulties were understood and foreseen to some extent.

To further the plan, it was necessary to have the sympathy of the Dominion Government, and for this purpose Dr. Roddick, of Montreal, decided to stand for election to the House of Commons. He was elected a member, and to him practically all the credit is due for what has been done towards creating the Medical Council of Canada. He promptly devoted himself and his time, while in the House and out, to enlisting the sympathy of the other members, and also to educating the general profession and the Provincial Boards towards the great idea and ideal of a Cana-

dian physician, as opposed to a Provincial physician.

In 1896 a bill was introduced in the House of Commons, and was passed, but so many were the difficulties encountered and obstacles to be overcome that more than fifteen years were to elapse before the Act could come into force. During this time one difficulty after another arose; but to go into details of this point would be to fill a large volume. One Provincial Council succeeded another in raising objections, but, after many meetings and many compromises, practically a new bill was decided upon. Then, as all matters concerning education are under the control of the Provincial Legislature, the consent of each province to the principles of the bill had to be secured. This was accomplished, and the Act as it stands today was passed by the Dominion House in 1911. The next step was to call an organization meeting to prepare the way for the smooth working of the Act, and this meeting has, during the past week, been held, and has concluded its work. Dr. Roddick was elected the first President of the Dominion Medical Council. Rules and Regulations, etc., were drafted, and, with the consent of the Governor-in-Council obtained, the Roddick Bill will be an accomplished fact, and all the machinery for turning out Canadian practitioners of medicine should soon be in smooth working order.

A few words on some of the sections of the Act and some of the difficulties to be still overcome, may not be out of place, so that other professions desiring somewhat the same result, may be guided on their way and saved from some trouble.

The Dominion Medical Council is composed of:

(a) Three members appointed by the Governor-in-Council.

(b) Two members representing each Province, elected under regulations to be made by the Provincial Council.

(c) One member from each University or Medical College engaged in active teaching of medicine.

(d) Three members representing the practitioners of Homeopathy in Canada.

Each member of the Council must

(a) Reside in the province for which he is an elected or appointed member.

(b) Be a duly registered member of the medical profession according to the laws of the province which he represents

(c) Be duly registered as a medical practitioner in the Register established under this Act.

Provisions are made for filling vacancies caused by death or resignation.

The Council is empowered to elect the necessary officers and committees and fix allowances to be paid to these and to the members of the Council.

Meetings may be held when and where thought necessary, but shall be at least once yearly.

The Council may decide what fees are necessary to be paid for examinations and for license.

It may establish and conduct exams. with respect to professional subjects only, and decide when and where these exams. are to be held.

The Council may grant a license to practise to any physician who has been in active practice in any province for ten years, though he may be required to take an examination in final subjects only if he wishes to move to another province, this examination to be conducted by the Provincial Council.

The Council is empowered to hold investigations into the conduct of any licentiate, and has power to remove his name from the rolls if sufficient cause is proved.

The matriculation standard is to remain in the jurisdiction of the provincial bodies.

The standard of examination shall not be lower than the highest standard of any of the provinces.

From these few extracts, it may be seen that the Provincial Boards still have practically all their old powers; can regulate matriculation, their own examinations; may decide under what circumstances a Dominion licentiate will be allowed to practise in the province, both as to fees to be paid and also what examinations, if any, he may be required to pass. These were the questions that caused the most discussion, representatives of different provinces taking almost opposite interpretations of the same clauses. However, it will be for the several Provincial Boards to decide, and it is hoped that each one will consider the matter in a broad spirit and allow the Dominion Medical Council to carry out its work for the good, not only of the medical students, the recent graduates and the physicians of years' standing, but also for the general good of all Canada.



## *Dominion Dental Council of Canada.*

BY DR. FRANK WOODBURY, HALIFAX.  
*President, Dominion Dental Council.*

**I**N September, 1902, the first concerted effort was made toward the Dominion Registration of Dentists, when men representing the various provinces met in Montreal to devise a plan whereby this greatly-to-be-desired object might be accomplished.

After much deliberation it was found that a scheme for a central examining body acceptable to the provinces could be devised, and a tentative outline of organization was formulated.

In September, 1904, representatives from the provinces again met, armed with resolutions and authority to organize and prepare regulations for the Dominion Dental Council. The following resolution was passed:

“That, in the opinion of this Council, the establishment of a Dominion Dental Council by mutual agreement among the several provinces, is expedient, such Council to have power to grant certificate of Qualification, which Certificates are to be accepted as qualification sufficient to grant licenses to practise in any of the provinces entering into said agreement.”

This resolution expressed the strong desire on the part of the provinces to maintain authority and control the Council. Two years after, the Dominion Dental Council was organized and accepted by the provinces, with a constitution that provides for reference of any change of policy to the Provincial Incorporated Dental bodies. This provincial control was deemed a wise provision, and time has proven its wisdom.

At present the Council consists of one representative from each agreeing province, who serves for a term of four years.

### OBJECT.

The object of the Dominion Dental Council is as follows, viz.:

(1) To promote a central organization under the control of the dental profession of the provinces of Canada.

(2) To erect and maintain a standard of education and ethics for the dental profession.

(3) To conduct examinations and issue certificates of qualification, which certificates shall be accepted, without further examination, by the provinces.

The Executive Committee consists of President, Vice-President, and one other member of the Council.

The Council is an Executive Board, empowered to appoint examiners, who shall set and assess papers on all vital subjects required in a modern dental education, under regulations that absolutely guard the examinations.

Presiding Examiners are appointed for each province, under whose direction the examinations and clinics are conducted. Thus, all parts of the Dominion are conveniently served, and no candidate is placed under hardship or unnecessary expense.

The Council does not conduct Preliminary Examination, but it does set a standard of Preliminary qualification which is equal to the highest in the Dominion. At present the minimum qualification is that set by the General Medical Council of Great Britain.

This was necessary on account of the disparity between the standards set by the Provincial Boards at the time of organization. As a result, nearly all the provinces are raising their Preliminary qualifications to the Dominion Dental Council standard.

For the purpose of securing a certificate from the Council, the profession is divided into four classes.

Class C.—Those who have been in practice ten years previous to Jan. 1st, 1905.

Class D.—Those who were registered before Jan. 1st, 1905, but who had not been in practice ten years.

Class B.—Those who were bona-fide students before Jan. 1st, 1906.

Class A.—Those who entered studentship after Jan. 1st, 1906.

Classes A & B must pass examinations before the Examining Board.

Class D may do so to hasten registration.

Class C is exempt from examination. All must conform exactly to the regulations of the Council.

The profession is familiar with all the details of the work of the Council, which renders it unnecessary to repeat them here.

The Council is not a Dominion registering body. This would prove a very expensive and, we think unnecessary, task to attempt. Since the Provincial Boards do not purpose to, nor should they pass the duty of registration for license over to a central body.

The Council does: (1) Establish Preliminary and Professional educational standards. (2) An Examining Board. (3) Provides convenient facilities for the examination of candidates. (4) Issues a Certificate of Qualification which is acceptable to and received by the provinces participating, subject to the regulations of each Provincial Registering Board. The fees from the candidates are sufficient to meet the expenses of the Council.

Thus the Dominion Dental Council is a delegated body, appointed by the Provincial Incorporated Dental Examining Boards, Councils, or Colleges, organized for the purpose of establishing educational standards, examining credentials, conducting examination of candidates, issuing Certificates of Qualification to those who succeed, leaving the functions and powers of the provinces intact and undisturbed. The provinces still conduct local examinations. They issue all licenses to practise and perform professional police duty within their territory. Yet, for those who wish to leave the bounds of their own province, the Dominion Dental Council provides a Certificate of Qualification which admits them to any agreeing province without further examination, provided that all other local requirements are met. We will refrain from further comment for the present, but it seemed timely that an outline of the functions of the Dominion Dental Council should again be brought before the profession, especially in the light of the establishment of the Medical Council in Canada, possessing almost the same functions.

We congratulate our medical brethren upon securing a Dominion Medical Council in Canada, and it will be interesting to note the development of their organization.

We have as yet run upon no rocks as a Dental Council from which we have not been able to back off without damage. The ship is tight, engines working, steering well, and ready to take on any additional cargo that will add to the value and influence of the dental profession.



## *Future Need for Dentists in Canada.*

BY WALLACE SECCOMBE, D.D.S., TORONTO.

**A**N important problem for the dental profession to solve is the future supply of dentists in Canada. Undoubtedly, within the next ten years the supply of dentists in this country will fall far short of the public demand.

Intelligent public opinion has been aroused to a realization of the importance of good teeth. Oral hygiene has become a matter of public health. Emigrants, who at home paid little attention to oral cleanliness (having followed the mistaken policy of allowing their teeth to decay, with a view to their ultimate extraction), find prospective employers demanding, as a first requisite, the proper care of the teeth. Indeed, newcomers find public sentiment so opposed to dental decay and oral uncleanness that they are made to feel uncomfortable until they have their oral cavity put in a condition of health.

Because of this ever-growing sentiment, and because, also, of an unprecedented increase in Canadian immigration, the question of supplying the future demand for dental service should be met without delay.

A well-regulated supply of dentists is as much the concern of the dental profession as is the protection of the public from the dishonest practises of the charlatan. If the public need for dentists be not met, a lowering of the bars to the profession is sure to follow, and it will be impossible to maintain the present standard of dental matriculation and education. The question, therefore, is not only of importance to the public, but also vitally affects the maintenance of the present status of the profession.

This is clearly shown by present conditions in England, where a lamentable situation has arisen owing to the great number of unqualified persons who are allowed to practise. If unqualified practitioners in England were eliminated, a large part of the entire country would be deprived of dental services, and consequently it is almost impossible to get legislation to correct the evil. If the public demand be not supplied by qualified dentists, it will assuredly be met by incompetents and dental quacks.

The problem in Canada cannot be solved upon short notice. Plans must be made now if conditions are to be adequately met ten years hence.

The 1911 Canadian census shows a total population of 7,204,772, with practising dentists to the number of 1,768. This is an average of one dentist to 4,080 of population, which clearly shows that even at the present time there is not a sufficient number of dentists to meet the increasing demand for dental service.

Official figures showing the ratio of dentists to population in the several provinces of Canada at 1st January, 1913, are now in course of preparation, and will be published in a subsequent issue.

In the Province of Ontario, where the ratio is more nearly normal than in the other provinces, there are actually fewer dentists per thousand of population to-day than there were a few years ago. This is accounted for by the circumstance that a large percentage of Ontario students, upon graduation, take up practice in Western Canada.

The whole situation is aggravated by the fact that many of the dentists who go west drift into commercial pursuits because of the many opportunities for business advancement that are present.

Because, also, of the wonderful development and growth of Western Canada, and the excellent commercial opportunities Western men are not entering for professional training as freely as Eastern men. For many years to come, the dental ranks of the West will have to be largely augmented by Ontario and Eastern graduates. This is clearly shown by the home addresses of the members of the present freshman class of the R.C.D.S.. The records show that in a class of 60 men—

- 50 reside in Ontario.
- 3 reside in Manitoba.
- 3 reside in Saskatchewan.
- 2 reside in Alberta.
- 1 resides in British Columbia.
- 1 resides in Quebec.

If history repeats itself, when these men graduate, at least 50 per cent. of them will go west.

A study of the percentage of increase in population of the several provinces of Canada in the last ten years is interesting, and indicates somewhat the future problem that will have to be met:—

<i>Province.</i>	<i>Per cent. Increase 1901 to 1911.</i>
Alberta .....	413.08 per cent.
British Columbia .....	119.68 per cent.
Manitoba .....	78.52 per cent.
New Brunswick .....	6.27 per cent.
Nova Scotia .....	7.13 per cent.
Ontario .....	15.59 per cent.
Quebec .....	21.45 per cent.
Saskatchewan .....	439.48 per cent.

The total immigration to Canada for the year ending 31st March, 1912, was:—

From United Kingdom .....	138,121
From United States .....	133,710
From other countries .....	82,406
	<hr/>
	354,237

For the six months from April 1st to October 1st of the current fiscal year, immigration figures are as follows:—

By ocean ports .....	183,990
From United States .....	89,659
	<hr/>
	273,649

This is an increase of 13 per cent. over the corresponding months of the previous fiscal year. If the same increase be maintained for the entire year, the figures for the present fiscal year will show a total immigration of 400,287.

Maintaining 1 dentist to 4,000 emigrants, it would require 100 dentists added to the profession annually to care for this increase in population alone.

The ratio existing in the Western States of the United States to-day ranges from 1 dentist to 2,500 to 1 dentist to 3,000 of population. Local conditions are different, yet there can be no doubt that in Canada to-day there could be maintained, taking one province with the other, a general average of 1 dentist to 3,500 of population. Such a ratio would mean the immediate addition of 300 dentists to the profession in Canada.

These figures do not take into consideration the natural increase in population, nor do they allow for defections from the dental profession through death, retirement, or



through members engaging in other pursuits.

What should be done about the matter? The remedy rests with the profession itself. It is incumbent upon the members of the profession to direct worthy young men into the ranks of the profession. Unfortunately, many dentists discourage young men from entering. These same men, as members of other fraternal organizations, may be found spending hours of time in an endeavor to secure the finest men of their district for membership in these other fraternities. What is to become of the standards and ideals of the dental profession if the present generation of dentists does not encourage the best type of men to enter the profession? Sixty men just entering the Dental College were individually asked as to the influence that led to their choosing dentistry as their life work, and as to whether dentists of their acquaintance had encouraged or discouraged them. Thirty of the number had been encouraged by dentists, while fifteen entered the profession in spite of the discouragement offered by dental practitioners. The question naturally arises: how many young men were, during the past year, actually persuaded not to enter the profession because of this lack of vision by practitioners?

Most every man yields to the natural tendency to belittle his own calling, though steadfastly remaining himself in the said calling to the end. While this tendency is inevitable and universal, yet, as dentists having the true welfare of the profession at heart, we should endeavor to secure for the profession worthy young men of our acquaintance, whom we judge well fitted for the practise of dentistry.

Having regard to the future need for dentists in Canada, and the maintaining of the professional standards, the onus surely rests upon the practitioner of to-day, to leave behind him worthy successors and a profession in good position to properly meet all legitimate demands that may be placed upon it.

## *Oral Hygiene in Ontario.*

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BY R. G. McLAUGHLIN, D.D.S., TORONTO.

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**S**OMEONE has ventured the statement that "When a city reaches the halfmillion mark in population, nothing on earth can stay its progress." That statement might be so generalized and elaborated that one could say of any movement or project that when it has been firmly established and launched on the way, it will then go forward, helped mightily by its own momentum. Might we not apply this statement to-day to the Oral Hygiene movement in Ontario?

It is now only some four years since this campaign was first authoritatively launched in Ontario by the appointment of a small Committee, and at the present time a critical look over the activities in the different parts of the province will amply show that the movement is already so well under way it would seem that wise guidance would be the only need for continuous growth.

The beginning was indeed small and somewhat hesitating, with a good deal of groping in the dark.

However, the Committee, on looking over the field, found work in abundance that ought to be undertaken at once. Without much investigation, it was discovered that nurses in training in our best hospitals were graduated and sent out to nurse the sick without any adequate knowledge of the importance of a clean mouth, or how to instruct a patient in the proper care of the teeth. Teachers in our public schools were practically ignorant of the laws of Dental Hygiene. Pupils in these schools, while instructed to come to school with clean hands and polished boots, were given no word of caution or instruction about the mouth.

These are but a few of the conditions found existing at the period of organization which appealed strongly to the Committee, and which urged immediate and strenuous action. The great obstacle to be met at the outset was not the enormity of the work to be done, but the ignorance and apathy of the people as to the need or necessity of any action whatever. Moreover, at the early stage of the cam-

paign only a comparative few of the members of the dental profession had thought at all seriously of their obligations to their patients in the matter of imparting systematic instruction on Oral Hygiene.

These were about the conditions as found by the Committee at the beginning. Now, where to begin and what to undertake was itself a serious consideration.

It was wisely decided that those who instructed the children and those who cared for the sick, the mothers, the teachers and the nurses, should be the first to receive attention.

So the earliest concentrated effort was to reach these three main centres, from which radiate so much of light and influence—the mother, the teacher and the nurse.

1. Arrangements were made to give a number of lectures on Oral Hygiene to the nurses in training in the larger hospitals of Toronto and Ontario. These lectures were, in most cases, well received, and by degrees became a regular part of the nurse's curriculum, upon which the nurse must pass an examination before graduating.

2. A carefully-composed pamphlet on "The Teeth and Their Care" was prepared by the Committee, and issued by the Ontario Government to the Women's Institutes throughout the province.

3. In most of the Normal Schools lectures were given on Oral Hygiene to the students in training for public school teachers of the province.

4. During the past year a second pamphlet (Bulletin 204) on "Decay of the Teeth" was prepared by Dr. A. A. Stewart, under the direction of this Committee, and issued by the Government to the teachers and Women's Institute.

The pamphlet has apparently created a good deal of interest throughout the province, judging from the many requests for "more" that are continually being received by the Committee.

5. Dr. Pyne, the Minister of Education, was interviewed by the Committee on the question of having some definite instruction on Oral Hygiene given to the pupils in all the public schools of the province. The Minister was quite in sympathy with the proposition, and agreed, if the Committee would prepare a pamphlet containing definite and concise information on the subject, to be made use of by the



teachers, that his Department would issue a copy to every public school teacher in the province. This pamphlet is now being prepared.

6. The public press has also been made use of wherever and whenever possible, to give the general reader some idea of the importance and care of the teeth. Recently the Committee has been successful in securing electrotypes of short articles on Oral Hygiene, for use in the daily and weekly newspapers of the whole province.

7. Several co-operating committees have been organized in the larger dental communities throughout the province to carry on the work in their own localities, in most cases under the direction of their own local societies. These committees are doing good work in arousing interest in this vital subject in the hospitals and schools of their districts.

The Central Committee has on hand lantern slides and charts, which are kept in circulation throughout the province, and are at the call of the committees or individual dentists for the purpose of illustrating lectures. These slides and charts are now in constant demand, which indicates the increasing interest taken in these lectures throughout the province. These charts, which have proven of so value in the campaign, were originally prepared by the Medical Inspection Department of the Toronto Board of Education, through the efforts of Dr. Doherty the Dental Inspector of that department. Through the courtesy of the School Board the Committee was able to procure some fifty sets of these valuable charts.

8. Because of the increasing demand coming to the Secretary for the lectures to be given on Oral Hygiene before Women's Institute meeting and teachers' conventions, there has recently been appointed a staff of some five or six lecturers in Toronto, who will be available to answer such calls in the future. As the work develops, similar staffs, it is hoped, will be appointed in other centres throughout the province.

9. The Committee has for more than a year been in close touch with the Provincial Government in an endeavor to have some definite step taken leading to the proper and systematic care of the teeth of the inmates of the provincial public institutions. The progress in this important matter has been, of necessity, slow; but success is apparently now in sight. Both the Provincial Secretary and Mr. Rogers, the Inspector of Asylums, are now in sympathy with the

movement, with the result that a necessary sum for the equipping of a modest dental clinic in all or most of these institutions is included in the submitted estimates for 1913.

To carry on this work systematically and on a uniform basis, a dentist will be engaged by the Government, who will devote his whole time to it, as an official of the Government.

10. It is, perhaps, within the City of Toronto that the most encouraging and decisive results have been achieved. Two years ago, little or no instruction was given on the care of the teeth in the public schools or hospitals of this city. To-day, in all the larger hospitals, lectures on Oral Hygiene are given regularly to the nurses in training, while in two of the larger hospitals, the "General" and the "Sick Children's," dental clinics have been established.

Suitable lectures are also given each year in a number of the private ladies' schools.

In connection with the Medical Inspection Department of the public schools of Toronto, a Dental Inspector has been appointed, and under his supervision each child in these schools has to undergo regular and periodical examination of its mouth and teeth.

Also, the City Council, through the Medical Health Department, is now establishing a civic dental clinic specially for children. The sole purpose of this clinic is to care for the teeth of those children whose parents are not financially able to pay the regular dental fees.

This clinic, which is expected to be in operation at the beginning of January, 1913, will be equipped with all the modern appliances and conveniences for the proper treatment of children's teeth.

One might go on to speak of other developments which indicate somewhat the deep interest the public is beginning to take in the welfare of the mouth. Many letters of enquiry are being received by the secretary from the United States, asking for information as to our plans of campaign, our lantern slides, charts, synopsis of lectures, etc. In fact, the correspondence carried on by the secretary has grown to such dimensions during the past year as to make very serious inroads on the time of a busy man. So much has the matter impressed the writer that he cannot dismiss the subject without making mention of the splendid services rendered the Committee and the profession by the secretary, Dr. R. J. Reade. Some idea of the bulk of the correspon-

dence handled by the secretary may be gathered from the fact that at the recent meetings of the Committee, fully one hour of the time is consumed in reading the correspondence in the hands of the secretary.

The future of the work in Ontario would seem to be fully assured. Wise leadership and constant vigilance will indeed be necessary. But if the high ideals of the past be maintained, and we believe they will, then the future citizens of Ontario should compare physically and mentally most favorably with those of any other nation.

The one aim ever in the minds of the Committee from the beginning has been to place the whole matter of Oral Hygiene under the control of the Medical Health Department. There it belongs, and there it must eventually be anchored. When this is accomplished the burden, financially and otherwise, will of necessity be assumed by the municipalities and governments.

### *Japanese Treatment of Syncope.*

A METHOD worth noting, which they term Knatzu, is employed by the Japanese, according to the *Scientific American*, in the treatment of severe fainting spells. It consists in striking repeatedly with the closed hand—doubtless the padded external edge of the palm—the most prominent of the vertebrae at the base of the neck, the seventh. Whether the successive shocks produce reflex contraction of the general arterial system and thus cause resumption of the cerebral circulation or not, the fact remains that the normal action of the heart and consciousness are restored. The patient is then seated, and his arms are given a rotary movement which, possibly by causing traction on the deltoid, or reflexly, enhances the circulatory and respiratory activity. He is also required to walk, to increase the circulator activity in the lower extremities, a precaution which, from the Japanese viewpoint, prevents recurrence of the syncope.



## *Removable Bridgework.\**

BY HART J. GOSLEE, D.D.S., CHICAGO, ILL.

\*Read before the Wisconsin State Dental Society, July, 1912.

THE entire success to be obtained from the application of bridge work of any type depends largely upon a judicious selection of that particular type which best meets the requirements of the individual case, and the question of whether a "fixed" or "removable" type should be used, or as to which will offer the greatest assurance of success, from both mechanical and sanitary viewpoints combined, has always been a problem.

Broadly speaking, in all cases where the number, relative position, and stability of the remaining natural teeth are favorable to the requirements of a mechanically secure and more or less sanitary structure, "fixed" bridgework will probably always afford the very best means of supplying missing teeth. In that great number of cases in which these essentials to the successful application of "fixed" structures do not obtain, however, or where the number of missing teeth to be supplied compared with the relatively inadequate number which may be used for support and retention, from a purely mechanical viewpoint, combined with the varying degrees of absorption demanding gum restoration, and the accompanying sanitary considerations, removable structures will likewise always be indicated.

Thus each type of structure has its more or less definite sphere of usefulness, and the successful application of each will depend as much upon the judgment exercised by the operator in selecting the best mode of procedure for the individual case, as upon the skill displayed in the construction of the fixture.

When all of the combined requirements of a fixed structure as thus outlined do not present, then a removable one is not only indicated but is demanded, and when this has been determined, and some type of removable structure is contemplated, at least two important features present, primarily: First, the particular natural teeth which will best answer the purpose of supporting the fixture, and, second, the best means of attachment for its retention.

## SUPPORTING TEETH.

In determining which of the remaining natural teeth will afford the best support for removable fixture, it should be observed that those to be thus utilized should be strong and healthy, and as nearly directly opposite each other in the arch as is possible.

If pathologic conditions are present, the necessary treatment to put them in favorable condition and insure their longevity should be previously followed, for the reason that the entire success of the fixture is essentially dependent upon their stability.

Additional stability may often be secured by uniting two teeth on one side of the arch, or on both sides, either by making crowns or inlays and soldering them together where they are adjacent to each other, or, if they be removed from each other, as in the case of a cuspid and third molar, for example, with a round iridio-platinum or clasp-metal wire, about twelve gauge, placed in direct contact with the summit of the ridge and attached to a crown or inlay at each end.

In this case you will see what I mean by that. We have a long span extending from the cuspid to the third molar on one side of the arch; too long a span in most cases for a fixed structure. Now the application therefore, of a removable structure, is necessary from a mechanical viewpoint, and we will get an increased stability in each of those two supporting teeth by uniting them together, and at the same time, as you will see in a moment, we will have a means of obtaining anchorage to that, which is very simple. This case will be passed around with the fixture which fits on it, in a few moments.

This latter procedure, which is commonly known as "assembled abutments," gives to each supporting tooth the combined stability of both, and may be otherwise advantageously utilized, and, since the supporting teeth in all instances are to be continuously subjected to considerable stress, every precaution which will insure or add to their permanent stability should be observed.

It is also important, from a mechanical viewpoint that attachments should be placed as nearly opposite each other in the arch as possible, in order to insure maximum degree of stability in the retention of the fixture, and if this is observed two attachments will be all that will be required in the average case.

To use more than two attachments in a single case only involves complications, makes absolute parallelism more difficult, and diminishes the facility with which the patient may be enabled to remove and replace the fixture.

#### ATTACHMENTS.

The selection of the type of attachment best suited to the requirements of the individual case is perhaps largely a matter of personal preference, but a very few general type will be found to adequately meet the demands of the average case.

Wide clasps encompassing three angles of the tooth, provided with an occlusal rest, not cast, but made of heavy rolled clasp-metal alloy, probably afford the very best means of obtaining anchorage to the natural or artificial crowns of bicuspid and molars.

That clasps should not be cast is especially emphasized, because the molecular rearrangement resulting from casting most of our present alloys destroys to a greater or less extent the very qualities of strength and resilience demanded of them and which undoubtedly obtain best in a rolled or drawn metal or alloy.

In all forms of removable bridge work or partial dentures, where clasps are used, however, some form of occlusal rest is necessary as a means of providing against subsequent settlement of the case. If this precaution is not observed, complete loss of occlusion and usefulness will soon follow.

The telescoping tube and split post attachment is useful when applied to the roots of the six anterior teeth, or where the tube may be buried within the tooth, and without a too liberal sacrifice of tooth structure.

The Roach, Morgan and other types of manufactured attachments will also be found valuable when used in connection with and projecting from either porcelain or gold crowns or gold inlays on the cuspids and bicuspid.

In addition to these, I am pleased to submit a method of attachment which, while perhaps but a modification of some of the previously mentioned types, is entirely new and more or less universally applicable.

*This article will be concluded in the February issue*

## ***Seventh and Eighth District Dental Societies, State of New York, in Convention.***

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BY F. A. BALLACHEY, D.D.S., BUFFALO, N.Y.

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\*Editorial note.

**C**EN years ago a meeting of this magnitude would have been impossible under these auspices. What has been accomplished is the result of evolution and growth."

Such was one of the paragraphs in the "Foreword" of the program sent out recently by the Joint Business Committee of the Seventh and Eighth Districts, of the meeting held at the Hotel Seneca in Rochester, November 14-16. The Committee had planned a large and interesting meeting, and here on the eve of its fulfilment they looked forward confidently to what the next few days would bring forth. And as "faith" founded upon "good works" is seldom disappointed, so they had the pleasure of seeing their plans mature and ripen into a good harvest.

The meeting was well attended. Men were present from many parts of the country—Iowa, Illinois and Pennsylvania—and two all the way from Birmingham, Alabama, besides many from the Fourth, Fifth and Sixth districts and other parts of the State outside the immediate bounds of the Seventh and Eighth. They were a large and enthusiastic body of men, all bent on learning what they could, and teaching what they knew to others.

The addresses and discussions were full of interest and the spirit of hope. Some old and tried acquaintances, like Pyorrhea Alveolaris, came in for more than their accustomed share of attention. Mr. A. Hopewell Smith, of London, England, showed some new pictures of its effect on the process, in the skyographs of his lecture on "Some

(Dr. Ballachey graduated from the Royal College of Dental Surgeons in 1900. Dr. Ballachey's class-mates as well as his many other Canadian friends will greatly appreciate reading his excellent account of the "7th and 8th" Meeting.—*Editor*.)



## ORAL HEALTH.

Studies of the Jaw in Health and Disease." Also, "The Perfect Porcelain Inlay" received a well-deserved stimulus at the hands of our other distinguished guest, Dr. Newell Sill Jenkins, of Dresden, Germany. Nor was the latest development of the dental profession—Oral Hygiene—overlooked. A glance over the programme showed two large spaces allotted to it for essays and discussions, not to mention various clinics bearing directly upon it.

The clinics covered a wide range of subjects, from the clever little device for making laboratory work more perfect to the more delicate procedure of showing how to administer an anæsthetic continuously through the nose, during an extracting operation or a sensitive cavity preparation. And last, but not least in interest, the exhibits were beautiful to look upon and tempting to the pockets of the unwary.

The detail of the meeting was well arranged. As the arrivals stepped from the elevator they were confronted by the registration desk, where each registrant was tagged as "Member," "Guest," "Exhibitor," or a member of the Reception Committee.

Clinics occupied the first morning and they were well under way by eleven o'clock, with nearly a roomful of enquiring dentists, seeking what they might find of value. On Thursday afternoon the Convention was formally opened with an invocation by the Rev. Henry Stebbins, D.D., Rochester, and appropriate addresses by the Secretary of the Chamber of Commerce, the President of the St. Society, and the respective presidents of the Seventh and Eighth Districts.

Dr. Edward C. Kirk, of Philadelphia, read the essay, entitled "The Locus Minoris Resistentiæ in orrhuca Alveolaris." (Dr. Kirk stated that a telegraph operator had refused to transmit this title to the Bus Committee in a night letter, it being contrary to the rule to use a foreign language in such a message.) In spite of the formidable look of the title, however, the meaning was well brought out in the paper. The essayist thought that possibly the point at which the disease formed its resistance, locally, was an embryonic gland found in pericemental tissue. The predisposing cause is undoubtedly nutritional and systemic, but the local issue of the disease may be due to this weak degenerative gland.

The essay was ably discussed by half-a-dozen men, the prevailing opinion being that, while both local and systemic causes enter in to bring about the condition, the local manifestations are probably due to a weak point in the pericementum giving way to the disease germ, which, in turn, probably has a selective quality for that kind of tissue. Dr. Jenkins made a good point when he said that in the treatment of pyorrhœa alveolaris, "Always, where there has been complete, delicate and patient instrumentation, the result has been the same." The man who sat on the left of the writer, in the audience, remarked that Dr. Jenkins might have added that, "Always where there has not been such treatment the result has been the same."

In the evening a paper was read by Dr. H. J. Burkhart, of Batavia, setting forth the proposed reorganization of the National, State and District Societies. If the reorganization takes effect, every member of the District Society will hereafter, by virtue of his membership in the district, be also a member of the State and National bodies.

A splendid talk followed by Dr. William A. Howe, of Albany, Deputy Health Commissioner of the State of New York. Dr. Howe's subject was, "Oral Hygiene from the Viewpoint of the State Department of Health."

Two years ago, in the same room, Dr. Howe had stated his interest in the Oral Hygiene movement, and had said that he would do all in his power to have the dental profession represented on the State Board of Health. How well he succeeded, and how much we of the dental profession in the State owe to him and his chief, Dr. Porter, it would be hard to tell. But, suffice it to say that, in the February following the meeting above referred to (viz., in February, 1911), through Dr. Howe's recommendation, two dentists were appointed on the State Board of Health as "Lecturers and Consultants on Oral Hygiene." Since then, two more have been appointed. These dentists have lectured to about 100,000 children throughout the State. "We are," said Dr. Howe, "teaching the children and parents the value of prevention. Preventive dentistry will be our largest field; medicine must also teach prevention." He thinks that very soon the State Department of Health will have a large division on Oral Hygiene. Other States are asking our department about the work we are doing, and New Jersey especially is to prepare a dental exhibit such as our State showed at Washington at the Hygiene Exhibit a few months ago. The Department is to send broadcast through the

State, as part of its educational work, a pamphlet on "Mouth Hygiene and the Care of the Teeth," written for that purpose, mainly by Dr. W. W. Belcher, of Rochester.

Dr. White, one of the appointees on the State Board of Health, spoke of the splendid reception with which the lectures meet from the teachers and others to whom they go. Requests come from all over asking for the lecture on Oral Hygiene to be given, and since June this year he has spoken to 40,000 school children.

Friday morning opened with a paper by Dr. John V. Conzett, of Dubuque, Iowa, on "Some Thoughts on the Preparation of Cavities for Gold Inlay." Dr. Conzett made a strong plea for beveled margins, and for thorough extension for prevention, bucco and linguo-cervically. He said that in making this latter it was possible to have the cavity so shaped that the morsul surface of the cavity need not be as wide as the cervical end, and yet the model may be safely withdrawn. This is accounted for by the bell shape of the tooth.

Discussion followed, in which an interesting point was raised relative to the direction in which the mandible exerts its force on the upper teeth—whether upward and backward or upward and forward. The writer is of the opinion that the force is exerted both ways, but it would take too much space to present the respective arguments.

Dr. Frank H. Skinner, of Chicago, followed with "A Few Suggestions on Oral Prophylaxis." After speaking of the benefits of periodic prophylactic treatments and of home care, Dr. Skinner went on to discuss the causes of decay through the chemical action of the acids held in close contact with the enamel by plaques. He also spoke of the necessity for oral cleanliness to prevent disease, owing to the fact that at the gingival margins of the teeth are situated certain glands which form gates for infection almost as much as the tonsils. He closed his paper with a reference to the Dunlop Vapor Treatment. This is a new thing, the idea of which came from the Orient. It consists in injecting into the gum, under the free margin, a gas or vapor, which passes into diseased arterioles, with very beneficial effect. It does not pass as readily into sound tissue. Dr. Skinner has had some interesting and beneficial results from its use.

On Friday afternoon, Dr. Jenkins, of Dresden, Germany, read an interesting paper upon "The Perfect Porcelain

Inlay." He said that Europe revolted against the large gold filling, and the advent of porcelain was hailed with joy. "Porcelain was born in America, but has reached its highest development in Europe." Europe still remains loyal to it, and in the making of it, to the gold matrix rather than the platinum.

Dr. Hofheinz, in opening the discussion, said that he occasionally heard men say that "The porcelain era has passed." "This is amusing," he said, for "upon how many has the porcelain era ever dawned?" "Porcelain has held its own in Europe during the delusive period of the silicate cements." He told an interesting episode of Dr. Jenkins' work, showing the great care used by the latter in the making and fitting of his inlays.

Several men discussed the paper, and Dr. Darby said that if he could do as good work as Dr. Jenkins has done, and is doing, he would use nothing else in the anterior part of the mouth. Nothing is more beautiful than the perfect porcelain inlay. And, after all, is not that true?

Saturday morning the meeting was devoted to clinics. An opportunity was also offered, for those who wished, to see the free dental dispensaries which have been established under the supervision of the Rochester Dental Society. The writer chose the latter, and, with half-a-dozen others, went, under the guidance of Dr. W. W. Smith, Dr. B. S. Hert, and some of the other Rochester men, to see the dispensaries.

Of these there are three. The longest established one is in a room in the building of the Rochester Public Health Association. This dispensary works in harmony with the Association, and patients are referred back and forth. For instance, if a child is sent to the dental dispensary, his teeth are put in proper condition. He is not forthwith discharged until it is ascertained that his eyes, nose, ears and tonsils are in a normal healthy condition. Vice versa, if he is referred in the first instance to the medical end of the Association. The Dental Dispensary is however on a different financial basis from the Association.

The next dispensary visited was at School No. 26. It is fully equipped, with two chairs and the other necessary furniture, and a commodious reception room. The equipment is the gift of one of Rochester's public spirited citizens, and its completeness bears witness to his generosity.



It should also be mentioned that the first dispensary was made possible in its inception, and also the first few years of maintenance were accomplished, by the generosity of another such citizen, who has since passed away. The maintenance of the dispensaries is now obtained through public subscription.

The third dispensary is at School No. 14, where a bright young woman dentist was at work on her ninth patient that morning.

A record is kept on suitable cards of all the work done in these dispensaries, and proper precautions are also taken to eliminate those who should pay for their work by a practising dentist.

This charitable work, done under the supervision of the Rochester dentists, was a revelation to those of us who had not seen it before. It was indeed a morning well spent. When one thinks of the future pain and loss saved by this work, one realizes how well worth while it is, and hopes that such things will be possible soon in many cities which do not now enjoy them.

In the afternoon, Mr. Arthur Hopewell-Smith gave his illustrated lecture upon "Some Studies of the Jaws in Health and Disease." Mr. Hopewell-Smith showed many slides, photographic and skyagraphic, and pointed out certain characteristics in the alveolus of the skulls of various animals and men which are dependent upon the diet and extent of use of the teeth in eating. It was not my good fortune to hear the end of his paper, or the discussion, but his slides showed what a great fund of information and depth of research lay back of that which he gave us. It is noteworthy, also, that the room was full of attentive listeners, though it was the latter part of the meeting, and many had sought their trains for home.

This letter would not be complete without a reference to that which was in many respects the crowning event of the Convention, viz., the dinner on Friday evening in compliment to the special guests from abroad, Dr. N. S. Jenkins and Mr. A. Hopewell-Smith. The dinner was held in the beautiful banquet hall of the Genesee Valley Club. It opened with the invocation by Dr. Rush Rhees, President of the Rochester University, followed by the playing of the National Airs of England, Germany and the United States.

It was my privilege to sit next to the old gentleman from Alabama, who, with his young partner, had come so far to be at the meeting. His keen appreciation of the meeting and of all the good things of life lent a touch of color and romance to the evening which nothing else could have given it.

The menu was good, and makes one hungry to think back upon; but the true feast was that of the toast list which followed. At such a time dentistry is lifted above the level of common drudgery, and is seen in its true light, as a great and noble profession going forth to bless the world and to conquer and prevent disease—a true branch of the great healing art of medicine. In speaking to the toast, "The Past and the Present," Dr. Rudolph Hofheinz touched the true chord when he urged the men, especially the younger men, to hold before themselves high ideals. He said, "Ideals are like stars; you will not succeed in touching them with your hands, but if you take them for your guide, as the seafaring mariner takes the stars for his, they will guide you to your destiny."

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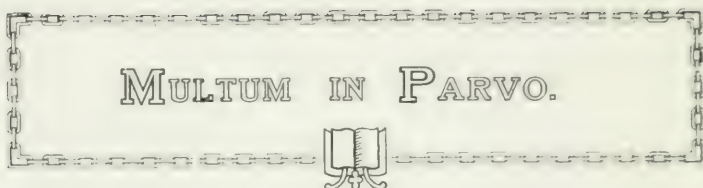
### *Pyorrhoea in the Lower Animals.*

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THE *British Journal of Dental Science* gives an account of a demonstration, by Mr. Colyer, of specimens prepared by John Hunter, illustrating the ravages of periodontal disease in man and in the lower animals:

"The specimens showing the ravages of pyorrhœa in the lower animals were extremely interesting. The skull of a Maltese terrier, whose last hours of life were spent on his mistress's lap, licking her hand, showed a very extreme stage of the malady; and it is, perhaps, a matter for regret that those ladies who delight in this type of domestic pet were not able to be present at the demonstration.

"The series of horses' skulls affected by periodontal disease was, perhaps, the most interesting of all. The readiness with which food collects between the teeth, even in the early stages of the disease, and the comparative impossibility of its being removed during life, are points which may explain the frequency of the condition in this animal."



This Department is Edited by C. A. KENNEDY, D.D.S.

*Helpful Practical Suggestions for publication, sent in by members of the Profession, will be greatly appreciated by this Department.*

*Address. C. A. KENNEDY, D.D.S., 2 College Street, Toronto.*

REMOVING PLASTER FROM A VULCANITE DENTURE.—Now and again a thin coat of plaster on the palatal surface, or between the teeth of a vulcanity denture proves difficult of removal, especially if the case is not promptly removed from the flask after vulcanizing. The denture is placed for a few minutes in a cold mixture of about equal parts of sulphuric acid and water, or the “pickle pot”; no injury is done to the denture, while the plaster is softened or dissolves, so that a little work with a brush wheel leaves it clean.—*W. H. Trueman, in Dental Brief.*

VULCANITE DENTURES.—In the event of the base rubber showing through the pink at any spot after the case is vulcanized, the defect can easily be remedied by drilling out the base rubber with a rose-head bur, and making the interior of the cavity larger than the opening. When this has been done, a small piece of the vulcanized pink rubber is cut from the distal end of the denture, warmed over a spirit-lamp, pressed into the undercut, filed up, and polished. If the work is done neatly, no joint will be visible.—*Ash's Monthly.*

NUMBER OF DENTISTS IN GREAT BRITAIN.—The number of registered dentists in the United Kingdom is 4,984; if the foreign registered dentists are included, 5,007. Thirty years ago there were 5,345, and in 1879, when dentists were registered for the first time, 5,289. Of the census number of 1912, 3,277 are licentiates and graduates in dentistry, viz., 65.45 per cent., while the rest of 1,696, representing 33.87 per cent., are listed as “without any additional qualification.”—*Deutsche Monatsschrift fuer Zahnheilkunde.*

SEPARATING FLUID.—A solution of ivory soap in water, colored with a little indelible ink, is a very satisfactory separating fluid. It dries very rapidly, and the model and impression separate perfectly.—*Western Dental Journal*.

USEFUL HINTS.—To remove gum tissue projecting into carious cavity, apply trichloroacetic acid on a small pellet of cotton to same, and in a few minutes the gum can easily be removed with a spoon excavator. Also apply same to gum tissue overlying third molar when badly inflamed, instead of lancing the gums or trying to remove the tissue with the scissors. Apply on cotton wound around a nerve canal plugger, protecting the tongue and cheeks from the action of the acid with absorbent cotton rolls.

An improvement on the lathe clutch used to hold sand-paper is to telescope over cylindrical part of same a piece of rubber tubing, and then over this either emery or sand-paper strips of desired length, and retained by wrapping with thread or cord. The rubber being flexible, makes this fine for dressing down a plate, is rapid, inexpensive and quickly made.—*M. M. Brown, D.D.S., Macon, Miss.*

TREATMENT FOR NAUSEA.—Occasionally a patient who is subject to extreme gagging and nausea, occasioned by application of rubber dam or in taking impressions. This is most frequently noticed in mouths of smokers, high livers and those addicted to the use of alcoholic liquors. The following treatment is efficacious: *First*, paint the mucous tissue of the mouth and palate daily for one week with 10 per cent. silver nitrate solution. *Second*, prescribe the following internally:

Potassi Bromidi .....	drs. 2
Ammonii Bromidi .....	dr. 1
Extract Cannabis Indicae .....	m. xxx.
Spiritus Menth. Pip. ....	m. xx.
Essence of Pepsin .....	oz. 2

Mix. One tablespoonful every three hours for two or three days prior to the operation.

*Third* Spray or paint several times, prior to taking impressions, the entire mucous surface of oral cavity with a 2 per cent. cocaine and campho-phenique solution. (10 grs. powdered cocaine to one fluid ounce original package campho-phenique.)—*Burton Lee Thorpe (Dental Brief), Dental Digest*.



## SOCIETY PROCEEDINGS.

### *Toronto Dental Society.*

Office of the Secretary, 2 Bloor St. East,  
Toronto, Dec. 26, 1912.

The next meeting of Toronto Dental Society will be held at the Dorothy Jane Tea Room, Yonge Street Arcade, at 6.15 p.m. on Saturday, January 25th, when Dr. Donald M. Gallie, of Chicago, will read a paper, the subject of which will be "The Bigger Things." Dr. Gallie, in his letter to the Secretary, said: "I trust the paper which I present will interest you. It is a little departure from reparative dentistry, but the greatest need of the dental profession to-day, I consider, is the mastering of the cause of oral diseases, and not the cure and repair."

It has been necessary to hold our meeting at this time in order to have Dr. Gallie with us. Dr. Gallie's reputation is well known in Toronto, and it will tax the energy of the committee to make room for all who will desire to attend the meeting.

A reduction in the annual fee for membership in the society will be made to all those who have not already come in this season.

C. A. KENNEDY,

President.

GEORGE W. GRIEVE,

Secretary.

### *Election Board of Directors, R.C.D.S. of Ontario.*

THE biennial election for the Board of Directors of the R.C.D.S. resulted as follows:—

District No. 1—Dr. W. C. Davy, Morrisburg.

District No. 2—Dr. G. C. Bomycastle, Bowmanville.

District No. 1—Dr. W. C. Davy, Morrisburg.

District No. 2—Dr. G. C. Bomycastle, Bowmanville.

District No. 3—Dr. W. C. Trotter, Toronto.

District No. 4—Dr. Donald Clark, Hamilton.

District No. 5—Dr. W. M. McGuire, Waterford.

District No. 6—Dr. W. J. Bruce, Kincairdine.

District No. 7—Dr. H. R. Abbott, London.

The Faculty of the School of Dentistry re-elected Dr. J. B. Willmott as Representative of the Faculty on the Board of Directors. The new Board will meet for organization and the transaction of business on Monday, 28th April, 1913, at the College Building, Toronto, at 2 p.m.

# ORAL HEALTH.

EDITOR — — WALLACE SECCOMBE, D.D.S., TORONTO, ONT.

ASSOCIATE EDITOR — W. H. DOHERTY, D.D.S., TORONTO, ONT.

CONTRIBUTING EDITORS { GEORGE K. THOMSON, D.D.S., HALIFAX, N.S.  
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Published in the hope that it may reach those with an open mind, a willing heart and a ready hand to serve.

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Vol. 3

TORONTO, JANUARY, 1913.

NO. 1

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## EDITORIAL.

### *The Dental Profession, 1913.*

THE opportunities and responsibilities confronting the dental profession to-day are of such magnitude they would appear almost overwhelming were the profession less confident or less self-reliant.

The past history of dentistry has been such that the profession has developed a spirit of confidence and a conscious strength akin to that found in the young man placed upon his own resources, who has made his own fight, proven his intrinsic worth, and finally made good.

It is fortunate for the profession that it has fought its own way up without pampering or indulgence. The result is that it stands courageous and hopeful, ready to undertake the duty at hand, and unabashed by the magnitude of the work that lies before.

The present hour is so pregnant with opportunity and so strewn with large problems urgently demanding wise solution that it may be truly said the 1913 dentist holds the destiny of the dental profession in his hand. Will he mar the perfect result or hasten on the day of fruition?

As time progresses, the members of the profession will doubtless work together in a more sincere spirit of fraternity. There will always be honest difference of opinion among individual members, but such difference will be held subservient to the best interests of the whole profession. As the spirit of brotherhood and fraternity be developed, so public service and professional attainment will be advanced.

May the year 1913 record a better and more loyal dental fraternity, to the end that a clearer vision prevail regarding the many problems and public responsibilities confronting the profession.

That the new year may be one of great achievement for the dental profession and of much joy and prosperity for the individual members is the sincere wish of ORAL HEALTH.

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### ***Shortage of Dentists and Dominion Registration.***

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**T**HE Dental Profession in Canada will have to face unusual conditions of stress within the next few years, resulting from a serious shortage in the number of practising dentists.

The ultimate solution of the problem rests in the hands of the dental profession, and lies in the direction of the individual practitioner personally persuading worthy recruits to enlist in the ranks of the profession. Even though all the Canadian Dental Colleges were crowded with students to the limit of their teaching capacity, it would take at least ten years to make any appreciable change in the situation. Should the present rate of Canadian immigration continue, the situation ten years hence will be even worse than it is to-day.

Some plan of Dominion Dental Registration that would make possible the distribution of dental practitioners throughout Canada, where they are most needed, would be of service in automatically and naturally relieving unusual conditions that are bound to occur in a rapidly developing country.

## ***A Series of Articles on Public Health.***

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THE Dental Surgeon practising modern dentistry labors daily for public health. He may be temperamentally fitted to take little or no part in a Public Oral Hygiene Campaign. Nevertheless, his daily office work, if conducted along approved lines, is none the less a contribution to public health.

Dentistry has now come to be recognized as an essential and important part of every organized health movement. The modern dentist is a co-worker with the many other agencies that are striving to raise the health standard of the human race and develop a more virile and more wholesome citizenship.

For these reasons we have arranged for the publication of a series of articles covering different phases of the public health problem. These articles have all been specially prepared for this magazine by leading Health Authorities, and will, we believe, be greatly appreciated by the entire dental profession.

The articles will not only prove of outstanding interest, but will be of much service in enlisting dentists generally in a more active participation in all those movements that have as their object the health and happiness of mankind.

The series is as follows:—

*Public Health, from the National Standpoint.*

By Dr. Charles A. Hodgetts,  
Medical Adviser, the Commission of Conservation, Ottawa.

*Public Health, from the Provincial Standpoint.*

By M. M. Seymour, M.D.,  
Commissioner of Public Health, Province of Saskatchewan.

*Recent Health Legislation in Ontario.*

By Dr. John W. S. McCullough,  
Chief Officer of Health for Ontario, and President of the  
Canadian Public Health Association.

*A Civic Health Campaign.*

By Dr. Chas. J. C. O. Hastings,  
Medical Officer of Health, Toronto.

*Public Health in Rural Districts.*

By Dr. F. W. E. Wilson,  
Medical Officer of Health, Niagara Falls.



*The Health Problem in Schools.*

By Dr. W. E. Struthers,  
Chief Medical Inspector of Schools, Toronto.

Dr. Hodgetts' article appears in this issue. The other papers will be published from time to time throughout the year.

***Meeting of the N.A.D.F.******Dr. J. B. Willmott Elected President.***

THE National Association of Dental Faculties held its annual meeting at Washington, D.C., on 6th and 7th of September, 1912.

The Association took up the question of what credit should be allowed Arts, Pharmacy, or Medical graduates who subsequently registered in Dentistry. It was decided that in "three year" schools the dental course is already so crowded and so short that no credit of time should be allowed.

Dr. J. B. Willmott, who was present, representing the Royal College of Dental Surgeons of Ontario, was elected President of the N.A.D.F. for the ensuing year.

***Moving Picture Films in Educational Work.***

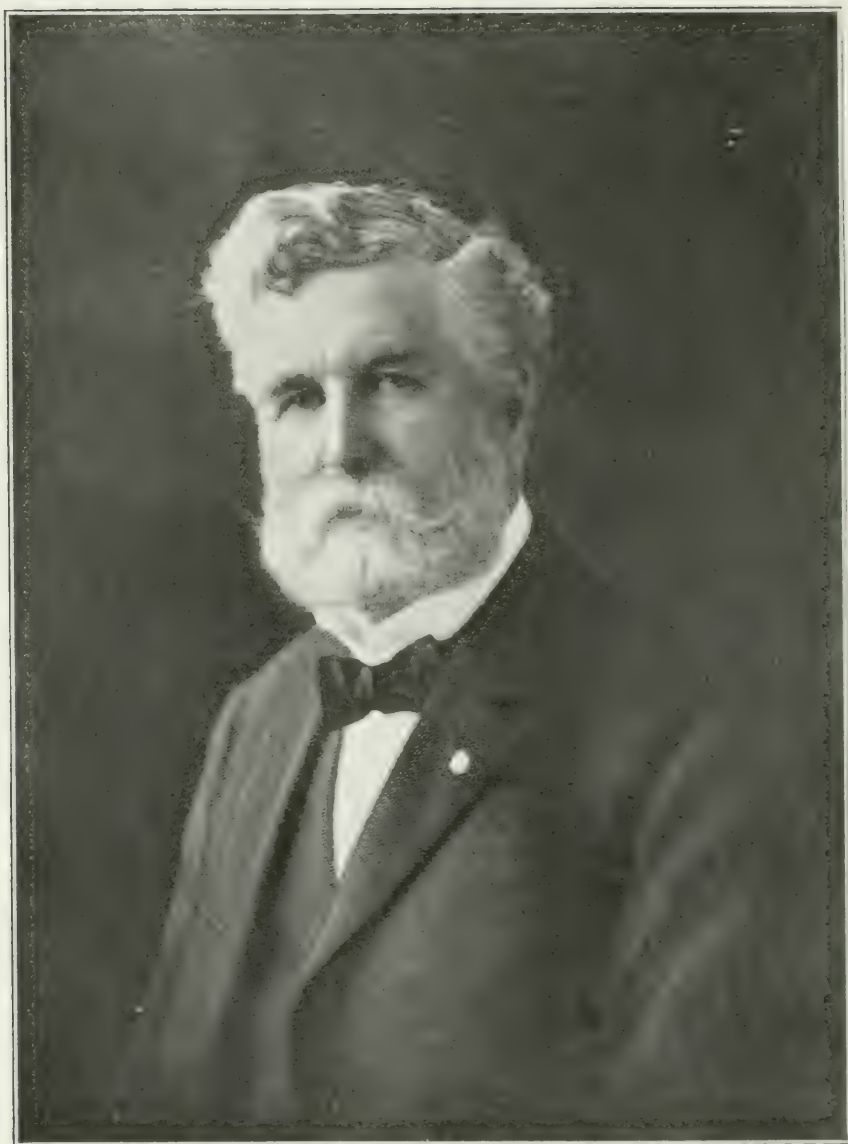
THE educational value of the cinematograph is acknowledged by all.

In Germany, the cinematograph has been introduced into the elementary schools, and is being used as a more modern substitute for the lantern at a Berlin Technical Institute. Even in Spain, that country which is considered backward in educational matters, the cinematograph has been introduced into the elementary schools.

The Spanish education authorities are showing the children attending the National Schools a series of films which are designed to show them how to take proper care of their teeth.

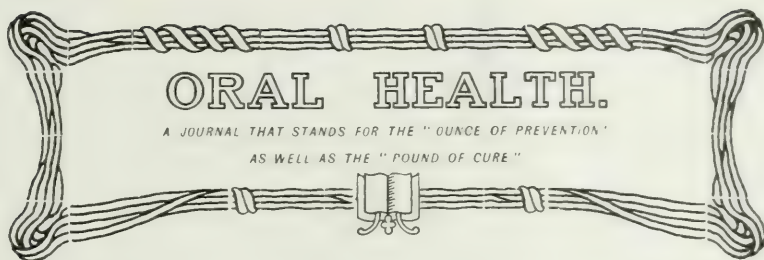
In United States, the National Committee has supervised the preparation of a film for use in the oral hygiene campaign, which will doubtless prove of much value in interesting and instructing the public in these important matters.

Let us  
as a profession  
ever delight to honor  
the men upon whose faith, courage  
and achievement rests the  
superstructure of modern  
Dentistry.



TRUMAN W. BROPHY, M.D., D.D.S., LL.D.

President and Dean of Chicago College of Dental Surgery  
and Professor of Oral Surg-ry.



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TORONTO, FEBRUARY, 1913.

No. 2.

## *Testimonial Banquet to Truman William Brophy, M.D., D.D.S., LL.D.*

**A** MAGNIFICENT Testimonial Banquet was tendered Dr. Truman W. Brophy in Hotel LaSalle, Chicago, on the evening of the 1st of February, 1913, by the Chicago Dental Society.

The intention of the committee was well expressed in the following words: "With the progress of civilization "there have appeared in every walk of life men who, by "their energy and devotion to their work, have become "leaders among their fellows.

"There is in the dental profession a man who has been "a material factor in uplifting his profession and in alleviating human suffering; and it is fitting that his co-laborers and friends should pay tribute, and take pleasure "in acknowledging to him, while living, their appreciation "of his life of service in and for the profession."

The list of speakers included Drs. C. N. Johnson, Chicago; Edwin T. Darby, Philadelphia; Newel S. Jenkins, Paris; John B. Murphy, Hamilton, N.Y.; and Drs. Fred W. Gethro, F. B. Noyes, Hart J. Goslee, W. H. G. Logan, Donald M. Gallie and John P. Buckley, of Chicago.

Presentations were made from practically every dental organization of importance in the world, and in addition to testimonials from United States and Canada, the following countries were represented: Italy, Spain, Denmark, Austria, Norway, Belgium, Germany, Netherlands, France and Japan.

It was a great banquet, and in every way worthy of the great man in whose honor it was arranged.

The Chairman was Dr. J. H. Prothero, and the Toastmaster Dr. Arthur D. Black.



## *Institute of Dental Pedagogics.*

THE twentieth annual meeting of the Institute of Dental Pedagogics was held in the Hotel Schenley, Pittsburg, Pa., on January 28, 29 and 30, 1913. The attendance was large, most of the forty-seven dental schools on the membership list of the Institute being represented by one or more of their faculties. The Royal College of Dental Surgeons, Toronto, enjoyed the distinction of sending the largest representation, nine members of the faculty being in attendance. McGill, Laval and Dalhousie were also represented.

It is doubtful if any other body exercises a greater influence on the status of the profession than the Institute of Dental Pedagogics. The raising or lowering of professional standards depends upon the men who, from year to year, are sent out by the colleges into the ranks of the profession. The Institute and its various commissions, in discussing at yearly intervals what to teach these men, and how to teach it, has done more to raise the standard of the new blood than any other body. It is an inspiration to any dental teacher to attend these meetings. The spirit of good-fellowship, the earnestness, and the totally unselfish attitude of the members in the interchange of ideas no doubt account for the fact that many of the members yearly travel great distances and at considerable personal sacrifice.

In the unavoidable absence of Chancellor McCormick of the University of Pittsburg, the address of welcome was delivered by Dr. S. B. Lynhart, the Secretary of the University. Dr. Lynhart's address was a scholarly effort, showing such a grasp of the aims and spirit of the dental profession as is too rarely met with outside the profession itself. Indeed, one of the striking features of the meeting was the everywhere-apparent enthusiasm and pride of the Chancellor and University authorities in the work being accomplished by the School of Dentistry of the University of Pittsburg, under the guidance of Dean H. E. Friesell and staff.

A number of important questions were introduced by Dr. H. E. Friesell in the President's address. There was an urgent need for more dentists and better dentists to meet the needs of increased numbers awakening to the importance of mouth hygiene. A higher type of student was necessary if we are to turn out men capable of finding solutions of the unsolved problems confronting the profession. Some means was needed for the placing of research work upon a sound basis. A return to the four-year course by the American colleges was urged, with provision for more and better prepared men on faculties.

The general feeling of the Institute was that greater stress must be laid upon the study of the sciences by dental students. The relationship of mouth lesions to general disease and of general diseases to mouth conditions, made it necessary for the dental surgeon to have a comprehensive knowledge of general Pathology as well as of special Pathology. It was imperative that he know the mouth as a portal of entry for systemic diseases, and also that he be sufficiently familiar with the pathology of a central group of diseases to intelligently refer them, by their oral manifestations, to the correct specialist. If dental research was to be carried on by dentists in the various institutions for general research work, it demanded men thoroughly versed in the sciences and in modern methods of research, as well as in the special pathology of dental surgery.

The question of the importance of giving dental students a course in art was introduced in a paper by Dr. Joseph Nolin, of Laval University. He urged that dentistry was both a profession and a fine art. The artistic aspect of dentistry could, and did, easily degenerate into mere craftsmanship if the fundamental principles of art were ignored. A complete study of these should be included in the curriculum of all dental schools, involving a fair knowledge of generally morphology and facial morphology, through free-hand drawing, clay modelling, and drawing, and modelling the face from life. Such a course of reasonable extent, under competent teachers, would raise the artistic standard of the whole profession to a level attained in the past by a few only.

The members of the Institute were the guests of the University of Pittsburgh at luncheon at the University Club, and also at a banquet in the Hotel Schenley. Addresses were delivered by Director W. J. Holland, of the Carnegie

Institute, on "Teeth"; A. W. Thornton, on "The Great Need"; Chancellor S. B. McCormick, on "Dentistry and the University," and Don. N. Gallie, on "Our Institute."

An amusing feature of the evening was the humorous cartoons of well-known members thrown on the screen. The music, by the students of the University of Pittsburgh, was also greatly appreciated. Some parodies on well-known popular songs, "taking off" some of the "characters" of the Institute, were introduced. Dr. A. W. Thornton, who distinguished himself as usual, was greeted with the following melody:

(Air—Chorus of "*Somebody Else Is Getting It.*")

"Thornton's a Prince from Canada, Canada;

Also a speaker of renown;

Naturally, since from Canada, Canada,

He's a defender of the big gold crown.

To show his British loyalty,

He boosts the crown in Dentistry.

Thornton's a Prince from Canada, Canada.

Long live His Majesty!"

The report of the Dental Index Bureau showed that the indexing has been carried on up to date, but that thus far funds sufficient for publication have not been secured. The value of the Index to the profession is incalculable. A library loses much of its value without it. On the other hand, the possession of the Index should be the greatest possible incentive to the building up of a library. It is to be hoped that means will be found in the immediate future to bring this great and valuable work to completion.

On Wednesday afternoon the members of the Institute visited the new building of the School of Dentistry, University of Pittsburgh, The Carnegie Institute, and the Carnegie Technical Schools.

The following Canadians were present at the meeting: Dr. Woodbury, of Dalhousie University, Halifax; Drs. Du-beau and Nolin, of Laval University; Dr. Berwick, of McGill, and Drs. J. B. Willmott, W. E. Willmott, A. E. Webster, A. W. Thornton, A. J. McDonagh, Frank Price, J. A. Bothwell, Wallace Secombe, and W. H. Doherty, of the Royal College of Dental Surgeons.

## ***Recent Public Health Legislation in Ontario.***

BY JOHN W. S. McCULLOUGH, M.D.

**T**HIS is embraced in the Public Health and Vaccination Acts of 1912. Apart from the idle vaporings of a few anti-vaccination papers and a feeble protest from the so-called League of Medical Freedom, whose criticisms showed that they had the vaguest ideas of what has been a part of Public Health legislation for the last thirty years, this legislation has received from the lay and medical press, from sanitary authorities and the general public, unqualified praise.

Exception was taken by a journal, whose animosity to the medical profession is seen expressed in its columns almost daily, to the fact that the Provincial Board should be comprised of medical men, forgetting the accepted fact that practically all the great achievements in the prevention of disease have been due to the efforts of physicians. When the lay press has a tithe of title to the reputation of the medical profession in this respect, it will be in order for its members to clamor for recognition in public health work.

Briefly, the Public Health Act may be considered by pointing out its chief features, as follows:

The organization in Ontario is comprised in the Provincial Board of Health. There are seven members, including the Chief Officer, who acts as Secretary and Executive officer. This Board is required to meet at least four times a year. The Board has a general supervision of Public Health work, and has power to make, with the approval of the Government, such regulations as may seem necessary for the administration of the Act. Provision is made for a chief medical inspector and sanitary inspector, and the Province is divided into seven districts, each with a trained district officer, who devotes his whole time to sanitary work within his district.

Each municipality is required to have a medical officer of health, who is, by the Act, made a permanent officer, and for whom a reasonable salary must be provided by the



municipality. He cannot be dismissed except for cause, and with the consent of the Provincial Board. All medical officers of health are required to attend an Annual Conference, their expenses being paid by the municipality.

A local Board of Health is provided for each municipality, cities and towns of 4,000 and over having five members, and those of smaller population, including townships, having three members. In all cases the head of the municipality and the medical officer of health are *ex-officio* members of the Board. The Clerk of the municipality, unless otherwise provided for, becomes the Board's secretary.

By Section 22 of the Act, the local Board is given a pretty fair latitude in spending of money for health work. This is only right, as the Board is charged with the carrying out of the provisions of the Act and regulations, including quarantine, disinfecting, etc. The latter being in the interest of the general community, is now required to be done at the cost of the municipality.

The construction of isolation hospitals and sanatoria or other hospitals for tuberculosis is subject to control of the Provincial Board, and provision is made, in case of dispute as to site, for an arbitration by the head of the municipality, the Sheriff of the county and the Chief Officer of Health.

In the matter of emergency hospitals for the control of communicable disease, wide powers are given to the local Boards, even to the taking of any land or unoccupied building for such purposes without the owner's consent.

The municipality is now required by law (Section 52) to make provision for the medical and surgical care of indigent persons, where such are not cared for in an hospital, by making a contract with the Medical Officer of Health or other qualified medical practitioner for the proper attendance of these persons. This will, it is hoped, prevent the imposition of the gratuitous performance of such duties upon the already overburdened philanthropy of the physician.

A long step forward has been gained by the inclusion of tuberculosis in the list of notifiable disease, and the addition of measles to those requiring to be placarded. All disinfection, quarantine and placarding is now definitely placed under the control of the Medical Officer of Health.

The suppression of nuisances has always been a difficult question with sanitary officers, especially in cases where business interests were involved. The Act has been strengthened materially in respect to dealing with these.

The law dealing with offensive trades is made very definite, and penalties for violation of these provisions of the Act is increased.

The Medical Officer of Health is given control over lodging-houses, laundries, etc., and may enter these at any time, day or night. The air space of the sleeping-room is increased from 400 to 600 cubic feet, and if the Medical Officer of Health deems any of these premises unfit for human habitation, he may close and placard them as such.

Dairies, cheese factories, creameries, dairy farms, and slaughter houses come under the purview of the Officer of Health, and he has power to order them to be kept in a sanitary condition.

The Provincial Board is given extensive control of public water supplies and sewage disposal. None of these may be established without the Board's consent, and where the Board approves of plans, etc., for the installation of such works, money may be raised on debentures for their construction without the consent of the electors. In addition, the Board has power to order repairs and other improvements of these utilities as may be required to maintain their effectiveness.

The local Board of Health has strong powers in the control of ice supplies, and may prevent the bringing into or sale within the municipality of ice which it deems unfit for domestic use.

Similarly extensive are its powers in respect to the inspection of meat and other food. Power is given a municipality to establish abattoirs or slaughter houses for public use, and to control the sale of meat slaughtered elsewhere than in the local slaughter house.

The penalties for disobedience of the health laws are very much increased.

The laws for the protection of workers in the mines, lumber camps and upon railway construction in the unorganized territories are very complete, and thereby all such camps are required to be of a sanitary character, and all must employ under contract a properly qualified physician.

#### THE VACCINATION ACT.

This Act was amended last year in one or two important particulars, to the effect that a proclamation of public vaccination, instead of being, as in the former Act, wholly a matter to be decided by the municipal council, must now be

carried out when ordered by the Provincial or local Board. The matter of requiring certificates of vaccination from school pupils is removed from the control of the Board of Education, and placed in the hands of the Medical Officer of Health and local Board, where it rationally belongs.

It is the object of those into whose hands the administration of these strong enactments are given to use them as little as possible, but rather to educate the public that it is wholly in their interest that the spirit of the law be obeyed in order that their health and consequent efficiency be maintained.

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### ***Removable Bridge Work.***

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BY HART J. GOSLEE, D.D.S., CHICAGO, ILL.

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*(Continued from January number).*

This attachment consists in utilizing the grasping principle of an open tube with straight and parallel sides, which is the removable part of the fixture, in combination with a round wire, of about twelve gauge, attached to and therefore a part of the "fixed" portion of the structure, but lying in a horizontal position instead of in a vertical one, in its relation to the supporting fixture.

I refer to this as an open tube, which is not technically or scientifically correct. It is made by opening a tube into a U-shaped form. Dr. Ottolengui has suggested that we call it a clutch. However, I find that "open tube" seems to suit me best until we get a term that will be more scientifically correct. But you understand what I mean by an open tube. Take a round tube, not soldered, and open it until it is U-shaped in form.

Such an attachment may be made by utilizing the tube of a "Roach" attachment in combination with 12-gauge clasp-metal wire, and while simple and easily constructed is especially useful in extensive cases, where the abutment pieces are assembled, though equally applicable to less extensive cases, where the abutment pieces are assembled, though equally applicable to less extensive, or to the most simple, cases.

Now, I will be very happy to pass this around so that you can see if you look inside of the saddle the position of the tubes; how easily they are tightened, and how little room they take up; and in this particular case you can take it off and put it on as often as you want to, because it has already been removed several times. The other two, however, I am not going to permit you to replace very much, because you have to know just how to get them replaced in order to do it without straining.

It is easily applied, easily tightened when loosened by wear, takes up but little space, does not require absolute parallelism when more than one is used on the same fixture, is applicable alike to either gold or vulcanite work, and is secure.

The conception of this attachment on my part was forced upon me in a very interesting manner. About a year and a half ago I inserted a large fixture in the upper jaw, involving the six anterior teeth and the two third molars, the latter being joined to the former with an iridio-platinum wire, 12 gauge, resting upon the summit of the ridge on each side. In about the centre of the wire on both sides a vertical split post was attached. This constituted the fixed structure, which was cemented to place, the split posts supporting a removable saddle, which supplied the bicusps and molars.

A few weeks after the completion of the case the patient returned with one of these split posts broken away from the fixture, leaving nothing to hold that side in place. At first this seemed a calamity, which meant only the destruction and removal of the structure, and the making over of the entire case. As this was not a particularly pleasant procedure to anticipate, and as necessity has always exercised a maternal influence upon the possible inventive ingenuity of man, it occurred to me that I might obtain attachment to that wire by grasping it with an open cylinder, or tube, lying parallel with it, and thus avoid removing and rebuilding the whole fixture. This I did, with the result that this side worked so well and seemed so much stronger than the one where the vertical split post remained, that I subsequently ground it off and used the open tube, and the utilization of this form of attachment in many cases since then have given me more satisfaction than I have ever obtained from any other method.



## TECHNIQUE.

In the application of this attachment in all cases where the supporting wire extended distally from the fixed portion of the structure and where it lies on the summit of, and parallel with the ridge, it is essentially necessary that it should possess a "head," which will prevent any splitting or sliding of the removable structure.

I can explain that to you very easily in this case here. We have bicuspid and molars missing on only one side of the arch. All of you who are familiar with mechanical procedures know that probably the most difficult type or case that we have is to supply missing teeth upon only one side of the arch, no matter whether it is upper or lower. Here is my method of supplying bicuspid on the upper and lower side of the arch. That projecting wire, which is to be utilized as a means of sustaining the removable structure, projects distally; lies upon the summit of the ridge and projects distally. In such cases it is absolutely necessary to have a head on the end of that wire, because, if you did not, the stress of mastication would force the tube backward on the wire and leave a separation between the cuspid and the artificial teeth supplied by the removable structure. On the opposite side we secure attachment there by extending the wire toward the palate, and of course that would overcome any possible movement anteriorly and posteriorly, and therefore the head on the wire is not necessary. That you can observe when this case is passed around, but I would request that you not try to put it on. You can see it goes on very easily if you know just how, but I want you to see both the fixed part of the structure and the removable part, and, therefore, I am going to leave it off and ask you to please not try to place it unless you can be sure you can get it there without bending it.

If such a provision is not observed, some movement and loss of stability will result from the stress of mastication; but when this wire is placed at an angle, or projects toward the centre of the palate, such provision is not necessary.

In that connection permit me to say that you can place that wire in any angle, projecting distally or mesially, and it does not affect the open tooth at all.

## GOLD SADDLES.

When used in connection with gold saddles, the fixed portion of the structure, including the wire extensions, wherever they may be, should be completed and cemented to

position on the supporting teeth. When firmly and securely attached in the mouth, open tubes should then be placed in position in their proper relation to the wire extensions, and a bite in wax and impression in plaster then taken.

When the impression has been removed, the tubes should be detached from the wire and placed in position in the impression and held securely therein with a bit of melted wax, if necessary.

If the tubes are at all loose in the impression, of course drop a little melted wax around it while you are filling up the impression and making the model.

A "dummy" wire of German silver, which should be a counterpart of the original, though somewhat longer, should now be fitted into the tubes in the impression, and the latter then varnished and fitted with a good soldering investment material. The presence of the "dummy" German silver wires causes the tubes to be held securely in position on the model when separated.

#### CAST SADDLES.

Where the saddles are to be made by the casting process, as soon as the model has been obtained, each tube should be carefully detached, and a small piece of round iridio-platinum or clasp-metal wire about 17 gauge, just long enough to project slightly beyond the tube at each end, soldered to the centre of the tube.

Place the tubes back in position on the model; then varnish over the entire surface well in order to facilitate removal of wax pattern, and then mould very thin wax to the desired outline of the saddle, and cut out to expose the wires on the tubes.

All of these saddles you see here have been made by the casting process. When you have got your tubes in place, with these wires soldered, then mould very thin casting wax over the outline you want your saddle to assume. When that is trimmed away then trim away until this wire which you have soldered to the tube sticks to the wax freely. This will leave a hole in the wax saddle through which each wire will be exposed.

Now stiffen and otherwise perfect the wax pattern; then adjust sprue-formers, remove, invest and cast, using coin gold. When the casting has been made, the opening through it should be trimmed until, when fitted to position over the model, the wire will project through.

The relation between the saddle and tube, with its wire

lug projecting through, should now be securely sustained with hard wax, removed from the model, invested, and soldered, after which the piece may be again placed on the original, and if to be joined with each other by means of a palatal strip, if in the upper jaw, or a lingual wire, if the lower jaw, these should now be fitted, and the attachment made by soldering directly on the model.

In order to make that clear to you, let me taken a moment to explain that you cannot supply teeth upon one side of the arch in either the upper or lower jaw without having some attachment upon the opposite side. That is a mechanical necessity. In the upper jaw, that attachment, whether it carries teeth or not on the opposite side, a secure attachment is best obtained by going across the centre of the palate with a strip of metal which I designate here as a palatal strip. That will give you anchorage upon the opposite side, if no teeth are injured; or if they are injured, it will give you a means of attachment, two saddles together, in a manner which occupies the smallest possible amount of space, as you will observe in the case just going around. A saddle on teeth in that manner, extending across the palate, will always support teeth upon both sides, if made strong enough, while, in the lower jaw, the 12-gauge wire extending from one side to the other is all that will ever be required. When you have made and fitted your two saddles and soldered your two tubes to them, and there be enough saddles, then make your palatal strip, fitting the wax in between. Lift that off and cast it and fit it down in between your two saddles; solder it directly on your metal, thus making the removable part of the sub-structure in one piece; originally in three pieces, but assembling them and making them into one.

After the substructure has been thus completed, it should be placed in position in the mouth and a bite in wax and impression in plaster then taken, after which the teeth may be arranged and the removable part completed in the usual manner.

#### VULCANITE WORK.

Whilst this attachment is equally useful when confined to simple vulcanite cases, still, to have the best results, the open tube should be attached to a palatal bar, or lingual wire, with solder, wherever possible.

What I mean by that is, if you want to make vulcanite saddles, without having gold saddles, you have got to have

a lingual bar, and you want a palatal strip in upper cases of the anterior teeth remain. These tubes can be attached to either that lingual bar by soldering, or to the palatal strip in the upper, by soldering, which will ensure their proper alignment and their proper relation, after which the saddles and the rest of the case may be completed in vulcanite work. When used in this manner the proper position is securely sustained, and the teeth may then be attached with vulcanity. In this procedure the technique is the same as previously described. Where the case is to be made entirely of vulcanite, however, the open tubes should be placed in position in the mouth and the bite and impression taken.

When the model has been obtained and mounted upon the articulator, the open-tubes should be removed, and a piece of 16-gauge iridio-platinum or clasp-metal wire, slightly flattened, and with each projecting end bent away from the open-tube and notched, should be securely soldered to the centre of the tubes.

Each of the open-tubes should then be mounted to position on the model with cement, allowing a slight surplus to remain. When this has been hardened, the relation will be securely sustained, after which the case should be completed in the usual manner, as for any vulcanite work.

A similar attachment, known as Gilmore's is now being manufactured, and may be easily obtained by those who do not care to make it. The only difference in this attachment I am now giving you and Gilmore's is that Dr. Gilmore anchors his attachment to the one side of the tube instead of to the centre, and it is much smaller. But you can make of 26 gauge clasp-metal this cylindrical open-tube in a very few moments, with a very small pair of pliers and a piece of 12-gauge wire will make the attachment for you in a very few minutes.

When the type or types of attachment thought to be best indicated have been selected, adapted, and completed, the casting process then offers splendid opportunity and great possibilities for the subsequent formation of the body of the fixture, and in this connection I believe that the successful casting of large pieces is but a question of the development of proper technique. I do not believe there is any limit to the size of the piece that we will be able to cast just as soon as we have developed the necessary technique for doing it.

In the construction of cast bases, if a good model of a



high-grade investment material is obtained, and if the wax base is carefully formed, made sufficiently thin and properly stiffened, the process offers every assurance of accuracy of adaptation and of strength, and the possibilities are unlimited. For all forms and sizes of saddles, or bases, coin gold seems to be especially adapted to cast work, and to afford all of the integral strength ordinarily demanded.

The third and last model is a little lower case, where we are supplying missing teeth upon both sides. You will see here we have a third molar remaining upon one side, and, in order to get all the strength possible I have attached or united that third molar to the cuspid tooth, thereby obtaining greater strength in the attachment of the removable piece upon that side. Of course we would have done the same thing upon the other side had there been a posterior tooth, but none remained; consequently, we used simply a slight extension there, just long enough to engage the tube, and you will observe upon this case that I have not placed a head on the end of the wire extending distally. This case was made up before I learned of the necessity for a head, so I call your attention to the fact that this case would not work very well now, because the left side would be forced backward, leaving a space, which could be very easily overcome by soldering a little flat piece of metal to the wire, forming a head. You can see how little room they take up in the mouth and how securely the anchorage is. This one I ask you especially not to replace because it has to go a certain way in order to get it right, and it could be very easily bent out of position in taking it off and putting it on unless you knew just how to do it.—*The Dental Review*

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**I**F every school teacher were properly equipped to teach, and would teach, those entrusted to their care, what every boy and girl should know of the principles of personal hygiene and preventive medicine, who can estimate the tremendous gain in national efficiency which would result."

If every teacher knew what ought to be known regarding the teeth, their importance and the evil results of an unclean mouth, and required his children to present themselves, from the time they enter school, with clean mouths the oral hygiene problem would be near a solution.

## *Stationary Bridge Work.\**

BY H. W. ANDERSON, D.D.S.

**S**TATIONARY bridge work occupies a very prominent place in the practice of almost every practitioner whether he be ethical or unethical, skilled or unskilled.

It is not so many years since the chief ambition of an afflicted patient, when suffering from some derangement of his masticatory apparatus, was to have the offending member extracted, and when a sufficient number had been so removed that he had to "chase" the food around his mouth before being able to corner the bolus between two grinders, he would resort to "the next best thing"—an artificial denture.

Now, however, with the added knowledge and skill of the dental practitioner, and the educational campaign constantly being waged by the profession as a whole, the people are being made to realize, both from the standpoint of health and appearance, the inestimable value of a well preserved and efficient masticating surface and the superiority from every standpoint of the natural over the artificial.

When a case presents itself with a part of the masticating surface missing, it behooves us as intelligent and honorable man to restore conditions to as near the normal or natural, both as to usefulness and appearance, as is possible under our individual skill.

When one or more teeth are missing from the arch leaving a sound root or tooth on either side of the space (providing the space is not too large), how better can we accomplish this than by a well fitted, properly occluded and scientifically made combination gold and porcelain bridge.

There is one retrieving point about dentistry. Though the nerve strain is great and the body and mind become fatigued because of it, it never becomes monotonous. Each case requires individual treatment drawing constantly on the operator for the best that is in him.

\*Read before the Technique Club, Toronto.

In deciding on the type of bridge for a particular case there are several things which must be considered:

- (1) The amount of strain to which it will be subjected.
- (2) Its usefulness.
- (3) Its appearance.
- (4) Its hygienic properties.

In estimating the comparative strain one must take into account:

- (1) The force of mastication indicated by the shape of jaws and teeth—some exerting several times more pressure per square inch than others.
- (2) The closeness of bite.
- (3) The length of bridge.
- (4) Its position in the arch—more lateral strain being wanted on the curve of the arch than on the straight and more crushing force on the molars than on the bicusps.

For posterior, where the amount of gold will not be conspicuous, perhaps no bridge is stronger, more comfortable, and more durable than what many are pleased to call the hygienic bridge, with properly fitted gold caps and a gold grinding surface for a dummy, leaving a good clear space underneath for a wash.

Where, however, for either appearance or usefulness, we desire to reduce the amount of gold to the minimum, we may substitute the gold caps for some one of the following attachments—the gold inlay, the Carmichael attachment or the detachable dowel and porcelain crown, with cast base; Steele facings or crowns, cemented facings (using graphite points in cast backings) or the old type of soldered facings or some other type showing a small amount of gold.

Now it is not my intention to go into the technique of construction of these different attachments, as I believe every member of this club is already quite familiar with them. I would like, however, to refer briefly to some of their merits or demerits in passing.

The cast gold inlay makes a very satisfactory attachment, providing:

- (1) The space between abutments is not too long, say two teeth at most.
- (2) Use a sufficient body of gold to give rigidity.
- (3) Use a fairly hard alloy, say 5 per cent. of platinum with pure gold.

- (4) Extend margins clear of contact with dummies so that they will be easily cleansed.

To give added rigidity and strength, a flat post or dowel may be used, binding it so that one end is projected through the inlay slightly into the bridge. If this be used, sometimes it is permissible to use a softer gold.

The Carmichael attachment has the advantage of saving tooth tissue and eliminating all appearance of gold. Even when, say in the incisors, a cavity exists in the approximal surface, and the appearance of gold is objectionable, the cavity may be prepared, filled with gutta-percha, and the attachment prepared in the usual way. Then, after the bridge is cemented in place, the gutta-percha may be readily removed and silicate filling inserted.

It must, however, be of some rigid alloy, such as Ney's clasping, to overcome any tendency to stretch.

This attachment has one disadvantage. It is often difficult to prepare its margins in such a position that they can be readily cleansed.

The detachable dowel and porcelain crown, with cast base has the advantage of reducing the amount of gold to the minimum, and presents a porcelain grinding surface which is always more efficacious than gold for masticating. With care in selecting the mould and color, the natural appearance may perhaps be more nearly reached than with any of the other attachments. One must, of course, have a fairly open bite to allow sufficient depth of porcelain, else he will be sure to court defeat.

Steel facings have been used with varying results. It may be that the cause of so many failures with them has been through carelessness in following directions of technique of construction. If the tip of backing be properly bevelled there is no reason why it should not be as strong as any other cemented facing.

Steele facings and the ordinary facings cemented (using graphite points in cast backings) have the distinct advantage of not having to be put through the fire. Hence, the color remains the same in the finished bridge as in the separate facing. If the color is right in the commencement one is sure that it will be right at the finish. The danger of checking a facing in soldering is also eliminated. They are readily replaceable should they happen to break in the mouth, especially if the dentist has taken the precaution



to keep a record of mould number and color.

The old type of soldered facings is still being used by a great many men. By some who are slow to take to new ideas they are used almost exclusively. Others use them occasionally along with some or all the other methods in vogue, believing that every case demands individual treatment and attention, and that what would be a decided success in one case would be just as decided a failure in another.

With care in backing, investing and soldering and using a reliable make of tooth, there is very little excuse for a checked facing or a change in color.

For dummies, the foregoing remarks for soldered and cemented facings will largely apply.

Where a porcelain grinding surface is desired in bicuspids and molars, we have the Goslee and Steele interchangeable crowns, the diatoric and ordinary plain pin-tooth. With all of these the amount of gold showing is very much reduced, and with the Goslee and ordinary pin tooth, is fairly strong, providing there is sufficient depth for a fair thickness of post.

In the writer's opinion, the Steele crown is weakened by the retaining slot running toward the lingual cusp, and the diatoric by the hole running from mesial to distal. Neither of these types will allow of any adjusting by grinding after construction unless the crown be very large.

The ordinary plain pin-tooth, ground with proper retaining grooves, and set in a cup of pure gold backing, which is afterwards reinforced in the soldering of the bridge, is, I believe, much stronger than either of these, only it is not as easily replaceable.

In planning for the usefulness and longevity of a bridge, we must take into consideration the following:

- (1) Care in construction, allowing nothing to act as an irritant to the soft tissues.
- (2) Perfect articulation; faulty articulation often causes loosening of the teeth used as abutments, or of opposing teeth, and has a tendency to put undue strain on the attachment.
- (3) Gold and porcelain should not be opposed unless the gold be strongly reinforced. The porcelain acts as a grindstone on the gold, rapidly wearing it through.

An operator overlooking this is sure to meet disaster sooner or later.

- (4) Whether gold or porcelain be used, the cusps, if bicuspids or molars, should be well formed and the grooves well retained, reproducing the natural as nearly as possible. The greater the departure from this the less will be its usefulness in masticating.

After attachment has been fitted and impression taken for bridge, no time should be lost in getting it completed.

It is well known that a marked change takes place in plaster after twelve or fourteen hours. It will often spell defeat in making an artificial denture to allow the impression, if in plaster, or the plaster models, to stand for two or three days before vulcanizing the case. The same thing holds true in regard to bridge work. The case should not stand unfinished over twelve hours after the models are prepared.

To avoid shrinkage in soldering, solder separate parts; then assemble and solder together, taking care not to have the solder over the whole case (if a long bridge) molten at once. A piece of small base wire, such as platinoid, inserted before or while soldering, and extending from one abutment to the other, will prevent shrinkage.

In casting, to have a perfect reproduction in gold, clean and free from bubbles, care should be taken to heat the case slowly, allowing the wax to evaporate gradually. If heated sufficiently fast to cause the wax to boil, the inlay will come out rough and untrue to original shape. This will be in proportion to the amount of boiling produced and to the size of the inlay. The larger the inlay, the slower the evaporation of wax through the sprue-hole in proportion to its size, and hence the greater the compression and disturbance inside the mould.

Again, let me say that every case demands individual attention, and if we would have success in bridge-work, we must use skilful judgment in deciding what type of case is best suited to the patient, and then the utmost care in working out every detail. Remember that the farmer does not use the same harness on the heavy draught horse that he does on his fancy driver, but that he is always just as sure that every snap is fastened.

## *Toronto Dental Society.*

**A**T the last meeting of the Toronto Dental Society, Dr. D. M. Gallie, of Chicago, presented a paper on "The Greater Problems" which was an inspiration and enjoyment to the large number present.

It was shown that the dental profession is doing practically nothing towards the solution of the problem of the prevention of dental caries. So far as "prevention" is concerned, present-day practice is little different to that recommended by the ancients, and our progress has been largely along operative and prosthetic lines.

Dr. Gallie pertinently asked what real use we had made of Miller's accepted theory of caries, and whether the public and dental profession are to remain satisfied with prevailing conditions, where 95 per cent. of the rising generation are afflicted with dental disease.

Reference was made to the hopeless position of the dental profession in relation to dental decay, erosion, pyorrhea alveolaris, replantation, transplantation and implantation, notwithstanding the limitless field of advancement that was possible in each of these departments. Pickereil's excellent work on the prevention of dental caries and oral sepsis was referred to, and of the scientific experiments carried on, showing the relationship of food to the saliva, and of the saliva to the teeth.

The following are a few of the very valuable suggestions made by Dr. Gallie:

Get on better terms with your medical brethren. We need them as much as they need us.

Take advantage of the hospitals, medical schools and institutions for study and research.

The course of study in all dental schools ought to be lengthened to four years, with a view to strengthening the teaching of the sciences.

Every society should have a department of research and organize study clubs, while provincial societies should conduct post-graduate courses.

### DISCUSSION.

In opening the discussion of the paper, Dr. Harold

Clark, of Toronto, said that he was not only pleased with Dr. Gallie's paper, but also liked the title of it. Dr. Clark referred to the wonderful progress of the dental profession in the last three generations, and declared himself proud to be a member of such a useful and progressive profession. The progress of the past had largely been in the direction of reparative work, and to-day little remains in this direction beyond the improvement of details. Thinking, ingenious and investigating members of the profession are turning to new fields of effort, to the solving of the greater problems; seeking the causes of dental ills and learning how to prevent them.

Reference was made to the interest being taken in Toronto by several of the profession in gathering information bearing on the causes of the various dental and oral lesions. Arrangements are being made for a paper by Dr. Kirk next fall, giving the last word on the relation between diet and these dental lesions, and pointing us in the most effective way to carry on scientific and reliable investigations into the causes of them.

Dr. Clark advocated the practising dentist constituting himself as an "observer" with the patient under his hand, and adding his little to the mass of data from which the more specialized research men may deduce conclusions. These latter might best work in our infirmaries, where ample opportunities would be afforded, and they should be well remunerated.

The speaker referred to the humiliation to the pride of civilization that, with all its knowledge and achievements, the savage races remain practically immune to dental caries. Immunity, however, is not incompatible with civilization, and the belief was expressed that properly directed research will enable us to lay our finger on the causes of caries. It was urged that every member should read Prof. Pickereil's "Prevention of Dental Caries and Oral Sepsis."

The over-ingestion of carbohydrate food was referred to as being responsible for nearly all dental caries by the reaction (after digestion) on the fluids of the mouth, quite aside from the effect of food debris left in the mouth. Applying this view in his own home, Dr. Clark found where all hereditary influences would lead one to expect much caries, his children are "as immune as any little Iggorates or Maoris."



Dr. Clark suggested that the following facts be kept in mind:

- (a) The immunity of the savage.
- (b) The immunity of a percentage of civilized people.
- (c) The immunity of many people in delicate health.
- (d) The immunity of many at different periods of their lives.
- (e) The immunity established in individuals after a change in diet.

The discussion of the paper was continued by Doctors Horace Eaton, A. J. McDonagh, Wallace Seccombe, A. W. Thornton, A. E. Webster and E. Fulton Risdon.

The thanks of the Socitay were enthusiastically tendered Dr. Gallie, upon motion of Dr. C. Harold Clarkson, supported by Dr. Bruce Nicholls.

The President, Dr. C. Angus Kennedy, was in the chair.

All those present voted the meeting one of the most interesting and helpful ever held by the Society.

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## ***A Letter from Buffalo.***

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BY HABEC.

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HERE are certain times in our lives when we feel impelled to come out in the open and speak our little piece. Just at this moment we feel such a spell coming on, and we assure you that, from present indications, it will be some spell. Habec rarely stands on his hind legs and barks unless there is a "coon up the tree." In this case, the "coon" is Dr. Gies, of Columbia University, who, for more than two years, has been pursuing strenuous (?) investigations relative to sulphocyanate in the saliva. Those who have read his address before the New York Dental Society at its last annual meeting, which was printed in the *Dental Cosmos* for January, will be forced to conclude that his tangible progress is inded meagre. Aside from experimenting on a few defenceless dogs, little seems to have been accomplished. But, forsooth, the wheels of science move slowly. After these dogs were scientifically dieted, they were "exsanguinated," which, by the way, was

a polite way of killing the poor brutes. They were then duly sliced and examined for sulphocyanate. The conclusion arrived at from these scientific assassinations was that the saliva of the canine never secretes sulphocyanates, and hence furnished no data available for use by the Committee of Scientific Research. Habec is acquainted with several aged and perfectly respectable horses who would, no doubt, be glad to offer themselves for this sacrifice, if promised a mess of oat when they reach the equine Beulah Land. No doubt they could be induced to expectorate a little sulphocyanate for the good of the cause. However, agreeably to the findings of Dr. Gies, the canine liver possesses a fully equipped, up-to-date outfit for the manufacture of sulphocyanate of a highly approved quality. This, no doubt, is a valuable scientific truth. Dr. Gies asserts that, "The inhibiting action on dental caries of sulphocyanate in saliva is doubtful," but in none of his reports has he shown that he ever employed it for this purpose *in a single case*. Yet, those who have employed it for its inhibitive action and derived gratifying results therefrom, are rank empiricists, according to his conclusions. His scathing denunciation of our use of it almost puts us in the criminal class, and makes us Mountebankus Exquisitus. He states that until we understand more thoroughly the therapeutic action of sulphocyanate we should not administer it, and that as dentists we are prone to take undue liberties with a comparatively unknown property because of our ignorance. Sting! Stang! Stung! But, dear Gies, how about your medical confreres, who, for years, have been administering sulphocyanate without the valuable knowledge of its action which you so abundantly possess? Of course *they* are not ignorant or empirical! Banish the thought! Only the poor dentist is so especially privileged. But, while Dr. Gies is, year after year, endeavoring to draw the veil of ignorance from our sightless eyes, the use of sulphocyanate must needs be suspended until he is able to bid us bask in the sunlight of his knowledge, with the absolute assurance that ignorance and empiricism have succumbed to the march of science. Hasten the day, Brother Gies! However, be not perturbed. O ye weak knees, but continue to prescribe it as before. Two grains of sodium sulphocyanate per week will not harm a canary bird. But the principal reason Habec is barking at the coon in the tree is that Drs. Gies and Kirk have tried to pass our good and staunch friend, Dr. Low, a hyper-acidulated lemon which he does not deserve. Here is the situation: Dr. Low

was billed to discuss Dr. Gies' "paper," to which we referred early in this spiel. Not receiving the usual preliminary copy, Dr. Low was obliged to base the discussion on Dr. Gies' report of the year previous, and took occasion to refute charges of empiricism made therein. Dr. Gies, in reply, directed his remarks in closing the discussion principally to roasting Dr. Low. Dr. Kirk followed this up with an editorial in the January *Cosmos*, entitled, "The Courage of Ignorance," and adroitly incinerated Dr. Low in his well-lubricated style. Dr. Low's discussion was printed as presented at the time Dr. Gies gave his address. Drs. Gies and Kirk re-wrote and embellished their discussions to suit their own fancy. Why did not Dr. Low have the same privilege? Does it look to be on the level to you? We might whisper in Dr. Gies' ear that, but for Dr. Low, he would not be perusing this interesting work, and we sincerely hope that he may unearth most conclusive arguments, either pro or con. In the meantime, we are for Dr. Low.

After all, "The Courage of Ignorance" is better than the Weakness of Assumption.

#### AS THE DENTIST THINKETH.

In the December *Dental Practice*, Dr. Symington discourses wisely upon "Psychology in Dental Practice." We are in accord with his views, and firmly believe that in no other profession is there greater need to control the mental state of our patients. Likewise, no calling demands control of the dentist himself than does ours. The common conception of adverse conditions by which we are confronted is generally attributed to "nerves." When this state affects both patient and operator, a state of intense friction immediately develops, and our most conscientious and otherwise well-directed efforts become failures. If the budding dentist could be made to comprehend the all-important factor of mental equipoise in connection with his daily work, his success would early be assured. It is far more necessary than expensive office equipment, and financial returns will result therefrom much quicker. There are many elements entering into the composition of the successful dentist. In fact, he is a composite creation of harmony and dissimilarity, if one can conceive such a make-up. "They themselves are makers of themselves" is a truism which must have been written with special reference to the dentist. And in order to "make" ourselves, we must garner from the immeasurable field of thought. As the dentist

thinketh, so is he. Our thoughts are like little pieces of mosaic, which are laid down to form the solid pavement of our lives, and are fashioned into forms and figures at will. But these materialized thoughts must be laid upon a good foundation, and in order to gain and retain harmony and continuity, they must be cemented into one common mass. First, then, lay the foundation—let us call it Prudence. Follow this with Directness of Purpose; then let Ambition take the helm, and, with a full sail of Right Thought, your bark will safely reach the Harbor of Serenity. This is but a metaphorical expression of practical psychology, and there is no goal beyond the reach of every dentist if he but realize that “thought is father of the deed.” He is poor, indeed, who is not rich within his own thoughts. Go forth from the din of street and factory on a summer’s afternoon and sit ye down “in green pastures by the side of still waters.” How monotonous and dull everything seems in comparison to the city’s unceasing turmoil. Not a sound is heard. But sit for a short time and attune your ears to the new environment. Let the strings of your heart become adjusted to the gentle touch of nature, and soon they will vibrate with a rhapsody of sounds which reach the innermost cells of your being. Soon they will burst forth into a song of harmony and joy which alone can be found within the enchanted realm of the Great Architect’s domains. First, the frisky fish splashes the limpid surface in quest of the daring fly, and little wavelets lap the shore. Next, the hidden cricket pipes his unceasing song at your side, and as you listen, there is added, one by one, the voices of the myriads of little creatures which swarm the surface of the underworld. In yonder tree the songbird is swelling its yellow throat with notes more perfect than man can produce, and even the “Chug, Chug” of the bullfrog seems to be but an accompanying basso-profundo. And we talk about the agonizing solitude of the country. Really, there is more sound (not noise) to the square inch in the old pasture back of the barn than there is in all the artificial instruments ever produced. But in order to hear these sounds, your thoughts must be attuned to nature’s lyre, and your “nerves” must be subject to the tranquilizing influence of normal serenity. When you have but six minutes in which to accomplish the work of ten, devote the first minute to a “tranquilizing period,” and the remaining five will be found ample for your needs. In other words, do not begin your work until you have yourself well in hand, and you will find no task too



arduous nor any operation too difficult to cope with. Cultivate the garden of your thoughts by right thinking, and you will soon find yourself, in truth, a lord of all creation, and your patients will acclaim you Blessed.

#### MOVING ALONG.

Well, here we are, up to 1913. New resolutions are being resolved in the usual order, and new hopes and ambitions are holding the centre of the stage. A year is only a short time, and each succeeding one seems to have been trimmed a little shorter. Many-Times-Great-Grandfather Time cuts the grass a little shorter each year, and ere long he will be down to bare earth. Then the pick and shovel comes into the game, and after that it makes little difference to us who cuts the grass over our remains. But, while we are here, it is up to us to get all we can out of the passing show, and be duly thankful for all that is passed out to us. Of course, every package handed us is not done up in Christmas ribbon, with sprays of holly and forget-me-nevers intertwined. Much that we receive in this world is just pushed at us without ceremony, and if we don't grab quickly, the other fellow gets it first. This is particularly true in our profession, and teaches us that a quick grab is better than a slow punch. Speaking of Christmas reminds us that we have good news for the compositor. However, he has, no doubt, discovered the secret already. We have passed from the lead-pencil to the fountain-pen stage, all of which is due to the thoughtfulness of our better four-fifths, who conceived the happy idea of presenting her liege lord with the above-mentioned indispensable accessory. Thanks, Mr. Santa!

But again, "reverting backwards" to the subject in hand, we wish to remark that the great cause of dentistry is forging ahead with long and rapid strides. In fact, it is "going some" just now. We are an exceedingly prosperous aggregation of highbrows, and vast numbers of impatient patients are crowding our reception rooms. Why is it such, did you ask? Listen, Terese! It is because of our old friend, Education. Whenever she unfolds her regal smile and displays her well-manicured incisors, there you will find a run on the toothbrush and the Dutch Cleanser. She is a first-class advance agent for the dentist, and to her recent activities is due the wonderful change of tide running directly to the operating chair. And fees! Why, owing to the "cost of high living" we have the legitimate license to

boost them in proportion. All you have to do is to deliver the goods and the fee will take care of itself. With the accumulated "nerve" we twist from our patients, we should have enough on hand to ask any old fee, and get it, too. It makes no dif of bitterance how much you charge; how much do you get? Habec has a friend who keeps no books. His motto is, "No checkee, no washee," and in consequence he gave his father and mother a Christmas present of twenty-five shining twenty-dollar gold pieces enclosed in a plush-lined morocco case. Take unto yourselves this lesson, Oh, ye young and fresh of our profesh—that ye may likewise become a bread poultice to soothe the aching void of the declining years of your nearest of kin. Many are the homely truths that may be gleaned from every-day, work-a-day life, and these are those from which we glean the great lessons of life. Be that as it may, here's hoping that 1913 will be the greatest year for dentistry that ever was; and so will it be if we each hustle for the same, and carry the pigskin over Education's goal.

NIAGARA FALLS INTO LINE.

The Board of Education of Niagara Falls, N.Y., recently approved a recommendation of a special committee to establish a dental clinic in the public schools, appropriating one thousand dollars for that purpose. The children's teeth will be examined by the city dentists, who will volunteer their services in caring for the poor. A nominal charge will be made where parents can pay; otherwise, the work will be gratis. This is indeed good news, and we wish Buffalo could show equal advancement. Perhaps the quickest way for us to get a clinic in Buffalo will be to annex Niagara Falls, which may come about in the course of the next half-century.

By the way, the Eighth District Dental Society held its last meeting at the Falls, and was well attended. The private car, "Ondiara," transported us hither and back again. Pyorrhea was discussed by a Buffalo physician, Dr. Jacobs, in a very comprehensive manner for an M.D. We hope to have the paper for publication. Dr. Louis Meisburger related a case of pyorrhea which was "cured" by Christian Science. The patient wrote a letter claiming that after a number of "treatments" the teeth became solid and the gums completely cured. Even the "healer" backed it up with a similar letter. So, of course, it must be true. We wonder how the "healer" knew it was pyorrhea. Why is it

## ORAL HEALTH.

that people become so deluded? It really is pitiful; but of course they do not want our sympathy. Where, prithee, does the irritating calicular deposit evaporate to; and how about the dead membrane? Christian Science is a grand institution in its place, but this seems to be a case of rubbing it in on the dentist. We would like to have them treat a case in orthodontia just for greens.

### DR. R. J. READE VISITS BUFFALO.

Dr. Reade and his associate officers of St. Paul's Chapter, Toronto, recently visited Aduytum Chapter, R.A.M., Buffalo, and conferred the Royal Arch degree in a most impressive and beautiful manner. The fraters of Buffalo who witnessed it were profuse in their praises of the work of the evening. We are deeply indebted to Robert and his corps of officers.

### AN INTENSE QUESTION.

When is "nerves" in the present tense?  
When you are having a tooth filled!

## *Dental Recognition.*

**I**T is human nature for us to feel that we do not get all to which we are entitled, but perhaps it would be as nearly true to say that we receive about what we deserve. We are all clamoring for recognition, or keep secretly wondering why our merits and attainments are not appreciated and fail to receive their fitting reward.

We are a race of self centered egotists, the base of all things being the spot where our own feet are planted. And it is wisely ordained that it should be so. This supreme consciousness of self is the source of a divine unrest, which spurs each to sustained effort, to the end of securing greater rewards.

A profession is but an aggregation of individuals with a common bond that consists in mutual work and aims. The psychology of the average man in a given profession is the psychology of the profession itself. The man who thinks

deeply may not always think broadly; concentration of effort is intensive rather than diffusive. And it is this that makes members of any profession self-centered, often leading to a magnifying of their own importance in the scheme of things, to the detriment of the other millions who are absorbed with other lines of thought and endeavor.

We become restless at the scant attention the profession of dentistry attracts, forgetting that to the great mass of men and women any appeal must contain a promise of material comfort or relief from present discomfort or pain.

Doubtless, like men of other callings, individually and collectively, we receive about the recognition we deserve. It does not flatter our vanity to admit this, but is a wholesome fact to get before us.

For some reason, the dentist is a super-sensitive being. Oftentimes he assumes the attitude of inviting and expecting ill-treatment, and anyone with this state of mind is rarely disappointed. If a cub reporter writes up a dental convention flippantly, the dentist persuades himself that it is but a reflection of the low estimate in which the public holds this great profession. He is wounded if his patients ask him how much an operation will cost, just as they would ask a watchmaker the cost of putting a timepiece in repair; and he demands that his services shall be regarded as strictly professional, the discussion of fees to be left in the background.

But the task of training the great public—a public not reared in an atmosphere of dentistry—is too great to be accomplished in a day. The results will always be greater if the dentist will set about improving himself, and if the profession will keep its attention centered on a better, fuller service to humanity.

As we have previously hinted, dentistry has done remarkably well. As a branch of the healing art it is extremely modern. Its present high standing hasn't been won by a beating of tom-toms. It hasn't gained its respectable proportions by artificial feeding. Its recognition has been won by the tens of thousands of industrious, capable men throughout the world, who, day by day, have performed their tasks of alleviating pain and repairing defects in the oral cavity. Had their work been less efficient, dentistry would now stand lower in public esteem; had it been even more efficient, our profession to day would be more highly regarded.

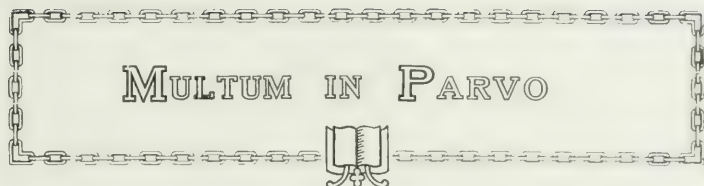


We must not deceive ourselves; if we would achieve, we must have merit—and then more merit.

The individual dentist, impatient to get on and possibly ill-equipped may resort to artificial methods in order to win recognition and get money. To get results quickly, he may have recourse to lurid advertising, justifying himself on the ground that he is entitled to live and pay his office rent. There isn't anything fundamentally immoral in his method; but it is in such questionable taste that were this practice to become the rule, dentistry would soon cease to be one of the learned professions. His attempt at justification lies in the fact that the business man advertises that which he has to sell, and the professional man may do the same. But the distinction lies just here: The merchant has goods to sell; the dentist has his service to offer. One is impersonal; the other personal. There is a vast difference between dickering over a barrel of sugar and proclaiming your own personal skill and efficiency.

Then, too, the advertising dentist takes an unfair advantage of his ethical brother. He succeeds through advertising, because most dentists do not advertise. If all resorted to printers' ink, a vast expense would be added to dental practice, which all would share, with possibly no increase in practice to any. Another form of advertising consists in elaborate, often garish, equipment. Of course, nobody can be too well equiped, but many are over equipped. Utility and taste should govern the professional man's surroundings. But elaborate appliances and ornate furnishings rarely produce a satisfactory practice and never help to give the profession higher standing.

The old-fashioned philosophy, that the world will recognize us in proportion to what we are and what we do, yet holds good. But whatever may be true of the individual, as a profession we shall be known by our fruits. And this does not mean that we shall be judged alone by these eminent specialists whom we delight to honor, but by the tens of thousands of earnest men, scattered throughout the land, who are quietly and conscientiously doing their work in every city, village and hamlet, whom their patients recognize as good citizens and men of skill in their calling.—*Editorial from Dental Brief.*



This Department is Edited by C. A. KENNEDY, D.D.S.

*Helpful Practical Suggestions for publication, sent in by members of the Profession, will be greatly appreciated by this Department.*

*Address. C. A. KENNEDY, D.D.S., 2 College Street, Toronto.*

**REPAIRING BAR PLATE.**—In drop bar attachment cases where through some accident the patient has bent or twisted the appliance, do not waste valuable time trying to bend it back into shape, but cut the bar diagonally at about the centre, place the two separate portions in position in the mouth. Bend the two ends of the bar until they are parallel again. Hold the tongue down with mouth mirror and drop in just enough plaster of paris around the bar and along the lingual over the occlusal of the saddles to get the proper relation of each side to the other. Remove, invest and solder.—*H. P. Boos, Dental Review.*

**A TEMPORARY SPLINT.**—It frequently becomes necessary to open up a pulp chamber or drill into a tooth that is extremely sensitive to the touch, especially in cases of abscesses and pericementitis. In these cases I found it a very nice way to soften modeling compound and pack it over and around the affected tooth and also one or two of the approximating ones. While the compound is soft, with your thumb and index finger squeeze it away from the "sore" tooth and to it adjust a double bow cervical clamp and pack compound well under the bows. After the compound has hardened you can drill into the tooth almost with impunity, as it is held absolutely rigid and secure. Molars are not so easily handled as bicusps and anteriors.—*H. A. Proehl, Dental Digest.*

(A simpler way to accomplish this is to tie a ligature around the "sore" tooth with a loop through which a finger of the left hand is slipped, with which a pull is exerted equal to the push of the bur.—*V. C. S.*)

**ALUMINUM INLAYS.** For making very large restorations (especially for the molar teeth) in cases, for example, where the prepared margin of the cavity is well beneath the gingival margin for upwards of half the circumference of the tooth, aluminum inlays are almost ideal. In such cases the actual intrinsic value of gold, if used, is quite a consideration. A closely fitting celluloid ring matrix is a great aid in getting an accurate wax pattern. After withdrawing the pattern, additional wax must be neatly added to allow for a tight contact point with any neighboring tooth. In casting these inlays with pure aluminum, we find we get the best results by heating the investment slowly and casting as soon as the absorbed wax is smoking vigorously. A layer of carbon will be noted upon the surfaces of the inlay upon washing off the investment with a brush, and a beautifully bright, even surface should be the result, provided the wax pattern was smooth and polished. There is a softness of edge in an aluminum inlay that closely resembles the softness of pure gold; consequently, in setting the inlay with cement, margins may be burnished advantageously. These inlays look very clean and bright when polished in the mouth, and do not darken or discolor at all, and, so far as my experience goes, are not affected by the oral secretions.—*Ernest Deck, D.D.S., L.D.S., Eng., in Commonwealth Dental Review.*

**REPAIRING BROKEN CABLES.**—If a cable engine is used in a surgery or laboratory, the cable—which is sure to break sooner or later—should not be thrown away. It can be repaired by placing a duplex spring over the broken ends, and attaching with soft solder. This repair requires but a few minutes, and the cable will render as good service as before.—*W. V. Wilkinson, in Commonwealth Review.*

**FLASKING A VULCANITE DENTURE.** The case is flaked and immediately placed over a burner at very low heat for from one to two hours, depending on the amount of wax used in setting up the denture. The flask is then opened, when the wax will have disappeared. The space is rinsed out three or four times with chloroform, and the rubber is packed and vulcanized, allowing one hour to raise the heat to 290 degrees, and maintaining it at that temperature for two and one-half hours. This method involves less trouble, requires less attention, and produces a firmer texture of rubber.—*T. Houston in Texas Dental Journal.*

# ORAL HEALTH.

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NO. 2

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## EDITORIAL.

### *Motion Pictures and other means of Instructing the Public in Oral Hygiene.*

AT the 1910 meeting of the Canadian Dental Association, during the discussion of reports of the educational committees of the Ontario Dental Society and the Canadian Dental Association, among other suggestions for the education of the public in oral hygiene offered by the writer were those of Motion Pictures and Insurance Company Mouth Health Bulletins.

So far as we are aware these suggestions have not been followed by either of these committees, but shortly after, the National Dental Association appointed a Motion Picture Committee which has procured a film illustrating in a very interesting manner the work of school children examinations, tooth brush drill and school dental clinics, etc.

The writer's idea of motion pictures in this connection was that they should show the contrast between neglected and well cared for mouths, and the difference in physical appearance of those possessing them, also the proper method of personal care of the mouth and teeth, with directions for brushing, etc.



For instance, the proper use of the tooth brush and dental floss in cleansing the approximal surfaces of the teeth, could be beautifully illustrated with the enlarged pictures it is possible to throw on the screen. A film of this kind in conjunction with the film of the National Dental Association would have a great educational effect on the masses.

#### MOUTH HEALTH BULLETINS BY INSURANCE COMPANIES.

It is the custom of some insurance companies to issue periodically to their policyholders, health bulletins which contain instruction for the care of the body generally. These companies also furnish free medical examination once a year.

In only one of these bulletins has the writer noticed any reference to the care of the teeth, and the importance of a healthy mouth to the body.

If the insurance companies generally could be shown the benefits to be derived from the education of their policyholders with regard to this matter and furnishing free dental examination, it would materially assist our educational propaganda.

#### DISTRIBUTION OF BOOKLETS.

One of the greatest factors in the dental education of our patients is presenting them with booklets on the care of the teeth, but judging from the few members of the profession who make a practice of it, its value is not generally recognized.

It is the opinion of some that it savors of quackery, but our patients at least do not think so, and after several years experience of systematic distribution of educational pamphlets, the writer is more firmly convinced than ever that every practicing dentist should have a supply of these in his reception room and request patients to take them home and read them carefully. If booklets on the care of the teeth are placed on the reception room table beside popular magazines, etc., it will be noticed that waiting patients give the preference to the booklets in selecting something to read.

#### EDUCATIONAL DOLLS.

We all know how children in the nursery like to play nurse and doctor to their dolls. Why not allow them to play dentist? Give them dolls with strong flexible cheeks, so that the teeth can be easily exposed to view and properly brushed. Teach the child at the "doll age" by this kindergarten method the importance of a clean mouth and teeth and they

will not forget it, but will learn naturally to care for their own teeth.

To have dolls of this description placed on the market it would be necessary to interview buyers of toys and interest them so that they might induce the manufacturers to make these dolls at moderate prices. If the manufacturers can produce the proper article we can imagine in the near future parents selecting these dolls in preference to others, for the reason that they would be educational as well as amusing.

A doll's tooth brush and dental floss with directions for the care of the teeth, might be placed in the box with doll.

Educational committees are to be congratulated on the excellent work they have already done throughout Canada, but this educational work is only in its infancy, and these suggestions are offered on the principle that "every little helps." If they are not practical, discussion of them might lead to new methods that would be so.

The columns of ORAL HEALTH are always open for suggestions and the discussion of these and other questions of interest to the dental profession.

G. K. T.

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### ***The Oral Hygiene Campaign. A Live Question Everywhere.***

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**T**HAT the subject of Oral Hygiene is a live question in every part of Canada and the United States is abundantly shown by newspaper clippings selected at random from the daily press of the last few weeks.

The following newspaper items give one a slight idea of the extent of the Oral Hygiene propaganda which is being carried on from one end of the country to the other.

The great problem for the dental profession is to provide operators to meet the increased demand for dental service.

*Waterbury, Conn.—*

Drs. O'Hara and Burnes have been appointed Dental Inspectors in the Waterbury public schools at a salary of \$600 a year each.

*Chester, Penn.—*

A Dental Department has been recently opened at the Chester Hospital, and has been equipped with two operating chairs of the latest design and all necessary instruments.

Free treatment will be given children under fourteen years of age every Thursday afternoon between four and six o'clock.

*Lynn, Mass.—*

Dental clinics are being established at the Neighborhood House for the benefit of public school children. Charges will be made to cover the cost of material. The School Board are co-operating to the extent of excusing children during school hours for the purpose of attending the clinic. It is proposed to employ a system of time-checking to prevent abuse of this privilege.

*Oakland, Cal.—*

The General Federation of Women's Clubs of the United States is inaugurating a National campaign for the co-operation of individual clubs and school authorities, in working for medical and dental inspection and the teaching of social and personal hygiene in schools.

*St. Paul, Minn.—*

The Woman's Board of the St. Paul Free Medical Dispensary are raising funds for the purpose of providing a paid dentist for work in the dispensary.

*Providence, R. I.—*

Dr. Jas. C. Colten, Dental Inspector of Public Schools, is urging the need of a municipal dental clinic. He suggests that the clinic be centrally located, with three chairs, and established under the supervision of the Superintendent of the Board of Health, with competent operators and a nurse in attendance.

*Toledo, Ohio.—*

The first Dental Clinic in Baltimore schools was opened a few weeks ago in Public School No. 1, under the charge of Dr. Dunbracco.

*Bridgeport, Conn.—*

A dental clinic is to be established in connection with the Bridgeport schools as the result of an educational campaign carried on by local dentists.

*Altoona, Penn.—*

Dr. J. C. Nugent recently appeared before the Altoona School Board, urging the establishment of a free dental clinic for the treatment of scholars attending the local public schools.

### The Grace of Persistence.

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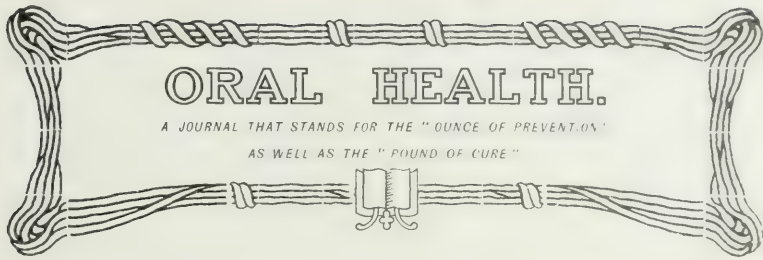
“To have the faith and patience necessary to keep at a thing is one of the very finest of the virtues. Nearly everyone has the ability and the opportunity to make life a success if he only has the grit and the persistence to keep on doing the things that need to be done and are for him to do. It is the great besetment of the man of unusual ability that he can do things so readily and easily that he misses his training in the splendid school of patience. After all it is the men of average ability who have had to plod, and wait, and learn, and climb step by step, who have made the finest successes and done the most with their lives. Persistence is an excellent grace.”





J. G. ADAMS, L.D.S.  
Toronto

The publication of Dr. Adams' Photograph is particularly fitting this month in view of the inauguration of the Toronto Municipal Dental Clinic.



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Vol. 3

TORONTO, MARCH, 1913.

No. 3.

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***Chronic Infections as a Cause of Chronic  
and Subacute Rheumatism.***

***(Arthritis)***

***Pyorrhoea and other Mouth Affections  
Especially Considered***

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BY C. STEWART WRIGHT, M.B., GRADUATE ORTHOPEDIC DEPT.  
CARNEY HOSPITAL, BOSTON, MASS.; ASSISTANT  
SURGEON, TORONTO ORTHOPEDIC HOSPITAL.

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**I**N a previous paper on this subject of Rheumatism (1), reference was made to its infectious origin, and the question was discussed chiefly with regard to intestinal conditions as a causative factor.

Further observation confirms me in the belief that all these chronic arthritic conditions are the result of infections, and that treatment must be based on this hypothesis.

This, I believe, is fairly well recognized, as, for instance, that Gonorrheal Arthritis, is universally accepted as an infection, but still some types are excluded as having other origins, chief of which are those supposed to be due to changes in the nerve mechanism controlling a joint, as Charcot's Joint, and those of traumatic origin, the trauma usually being in the nature of a shock or injury to the nervous system.

The first, that of a Charcot Joint, I believe might reasonably be included—since the condition is one recognized as a result of syphilis, which, in turn, is known to be an infection, and whether the joint disease results from direct

infection, via the lymphatic circulatory system, or indirectly through the injury produced in the nervous system, does not blind one to its true origin.

Of the other class, so-called traumatic, I might relate the case of a woman around fifty years of age, who was in reasonably good health until shortly after the sudden accidental death of her son. I need not describe the mental shock and anguish, with its worry, loss of sleep, appetite, etc., under such circumstances. The progressive arthritis which followed shortly on this injury, and which in a short time produced invalidism, was by more than one physician stated to be due to the nervous shock, and no doubt that had a bearing, but only a secondary part.

The real cause probably was due to a condition of mouth infection, which will be described later, and which even before any injury, contained the potentiality of disease, but which was resisted until the immunity was lowered by deficient nourishment, through worry, loss of sleep, appetite, etc.

*Immunity.*—The question of immunity here becomes a consideration, in that it is generally recognized that infections are ever present with us, and were it not for our inherent immunity or resistance to them, our existence would be a short one.

It is also granted that small but constant doses of toxin tend to break down immunity, while large doses, as in the acute diseases like typhoid, pneumonia, etc., tend to produce immunity, and it is by such efforts on Nature's part that health is finally restored.

The infection observed as having relation to these rheumatic conditions, are essentially chronic, and can often be demonstrated to have been present for years previous to the onset of their systemic expression, in the way of an arthritis or so called rheumatism.

Further, this systemic expression of a local disease may frequently occur following an injury, exposure to cold or wet, or, in fact, any circumstance which tends to suddenly lower the general resistance of the body. Consequently, the tributary cause often receives the blame, while the underlying and ever-present original cause is overlooked.

As indicated, the infective foci may be varied, but attention will be directed especially to mouth infection. Of these we will consider:—

Infections resulting from

- (a) Teeth Proper: (1) Caries of Teeth.
- (2) Buried Roots.
- (3) Crowned Teeth.
- (4) Bridges.

- (b) Gums and Alveolar Processes: (1) Pyorrhoea.
- (2) Alveolar Osteomyelitis.

In caries of the teeth, not infrequently the pulp becomes infected, in fact, this may be considered the rule where much destruction exists, and the familiar gumboil is a common expression of this condition, where the infection is sufficiently acute to make its way through the alveolar process. Where infection is less virulent, the subject of such a condition may not be so fortunate, as I shall endeavor to demonstrate. Quite frequently, instead of finding an exit through the alveolar process, a chronic abscess is harbored at the base of the tooth, and this without subjective symptoms of its presence.



Fig. 1.

Abscess existing Four Years in Tibia. Illustrating Chronic Process.

To show further this tendency to chronic abscess formation in bony structures, and their existence over a period of years with very slight symptoms, Fig. 1 illustrates an ab-



cess in the tibia of a girl 17 years old, which had been present for four years, but not until then were symptoms sufficiently acute to demand treatment. At operation the pus removed gave pure culture of *Staphylococcus albus*. In two other patients similar conditions in bones of the foot and leg observed within a year would show that they may not be considered entirely a rarity. These instances also help us, supposing we had not abundant objective evidence, to conceive of the possibility of similar infection in the jaw bones in connection with the teeth, which, when decayed, afford a much more direct mode of infection.

These conditions also force us to consider the question of relative virulence of infection. If we leave out such infections as syphilis and tuberculosis, in which relative chronicity or virulence is well demonstrated, in that the disease may be latent for years, and we consider pus producing organisms, our minds naturally portray something acute, which must express itself in quite a definite fashion. It is in this regard I believe we must remodel our mental picture, and be ready to conceive of pus producing, or, if you like, toxin producing organism of very low virulence, or very chronic action, which may produce systemic effects in the absence of marked local symptoms. Admitting this, however, we cannot separate the infection from its host, and, consequently, the relative resistance, immunity, is part of the consideration, and may be the chief determining factor as to when any infection may demonstrate itself as disease.

Now, to consider a definite case of alveolar abscess. Fig. 5 illustrates the mouth condition of a patient with the following history. Man, aged 25, referred to Dr. R. H., for painful condition of right hip, both knees and feet. The left foot in particular was rigid, swollen, and so painful that walking was difficult, and the knees could not be completely straightened. He had taken ill suddenly with painful feet sixteen months previously, and had not been able to work since. He was treated at a hospital in the City of K. for three or four months, moved to C., his old home, and was under hospital treatment for a similar period. Then came to Toronto and continued treatment, being referred to me at the time I saw him, owing to no improvement, and progress of the disease. During that sixteen months his difficulties had increased, in spite of all the medicines, anti-rheumatic and otherwise, which had been prescribed.

On searching for a cause, which is my custom in all these

conditions, the mouth presented sufficient evidence. Twenty-two teeth were diseased, and pus was exuding from a considerable portion of the gum margin.



Fig. 5

X Ray of Mouth where 22 Teeth were diseased, 4 with Chronic Abscesses.

*Treatment.*—(1) A vaccine prepared from the pyorrhoea discharge of the gums.

(2) Dental treatment of teeth.

(3) Local treatment of affected joints, mainly by hot fomentations, massage, uniform warmth and rest.

(4) No medicine, except for regulation of the bowels, and large quantities of water.

Following is the dental report of the twenty two teeth requiring treatment. Nine were extracted, and of these four had chronic abscesses at the base; of thirteen filled, three were putrescent. Much of the gum was infected, mainly along teeth decayed to the gum margin, which improved quickly with treatment of the teeth. The striking feature is that all this was present with practically no subjective symptoms. The result of treatment thus directed at removing the cause was so rapid that in a month the patient walked with comparative ease, was relieved of all pain, the

swelling had subsided, and the rigid foot had become quite flexible. There have been no retrogressive symptoms since commencement of treatment, and nature seems to be restoring normal conditions as fast as such fibrous changes permit.

In this class also is the dead tooth, possibly resulting from the irritation of large fillings, and sometimes relieving its infected base by a chronic discharging sinus.

Rheumatism or arthritis resulting from such a condition is illustrated in Figs. 3 and 4, showing a healthy foot and one with arthritic adhesions. Eight teeth required treatment, three were extracted, of these two had abscesses, one with a chronic sinus. This patient four months after treatment, reported again only a few days ago, showing very marked improvement in the way of increased flexibility, diminished swelling and tenderness, and, in fact, walking with comparative comfort. This we consider very satisfactory progress, considering the amount of involvement of the joint surfaces and the fact that the whole process was becoming progressively worse before correction of the mouth conditions.

A very interesting feature, however, on the recent examination, was to find one of the teeth filled at first treatment very tender and pain to pressure. The dentist's report of this condition was a dead and infected pulp, which had probably died since the filling was placed four months previously. The possibilities of this condition in producing arthritis is well illustrated by the following record of a case reported by Dr. Goadby.

A girl aged 21 was attacked somewhat suddenly by swelling of the hands and feet, and fever lasting two or three weeks. With the subsidence of the fever the joints did not return to their normal state, but remained painful and stiff; walking was almost impossible. The affection was bilateral, and the swelling was evidently peri articular, and, to a limited extent, affected the synovia of the joints, but no fluid was discoverable. Treatment at baths, and a long course of salicylates produced little improvement. There was no family history of rheumatism or gonorrheal infection, and no septic focus was thought to exist. On examining the mouth the right upper central incisor was missing; the teeth and gums were apparently quite normal. On examining more closely a small sinus was discovered leading up to the root of the missing central incisor, and a film was

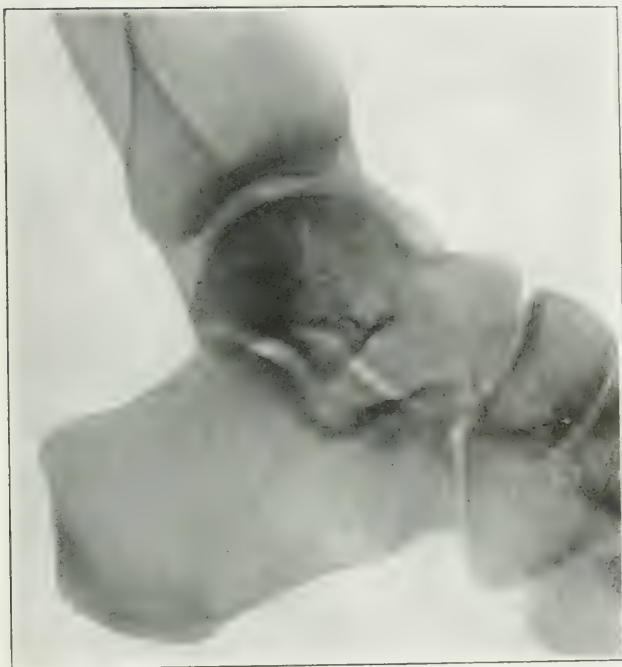


Fig. 3.  
Normal Joint surfaces of healthy foot.



Fig. 4.  
Arthritic Adhesions in diseased foot. Same patient as Fig. 3.



made from the sinus showing a large number of pus cells loaded with organism. Cultures were made, and an organism was isolated in practically pure culture. The blood tested against this organism gave a very low opsonic, as well as a low phagocytic index. A vaccine was prepared and injections were given, commencing with ten million doses. After four injections the sinus was opened up under a general anaesthetic, and was found to lead into a cavity in the bone about the size of a small hazel-nut. This was cleared, and the lateral incisor also was removed, the cavity extending under its roots and invading the periosteum of the tooth. The improvement of the joints which had commenced with the inoculations received a slight temporary setback, as the immediate result of the operation, but improvement was soon recommenced, with continued vaccine therapy, and the patient has steadily improved, and is now almost well.

*Crowned Teeth and Bridges.*—It is not my intention to discuss the merits or the failures of the crowned tooth. No doubt it serves a purpose, or it would not be used, but my own observation would lead me to advise its omission wherever possible. The gum in contact with a crowned tooth I seldom find in a perfectly healthy condition, even when correctly fitted and shaped. When not perfectly fitted they undoubtedly form ledges and crevices for the harboring of detritus and bacterial organisms, and as such are a detriment to general health.

*The following history may illustrate.* Patient aged 25, referred by Dr. M. for painful feet, had an attack of rheumatism affecting spine, hips and both feet in December, 1911, supposedly caused from sleeping with insufficient covering and getting a chill. The attacks diminished, but never completely left the back and hips, and progressively increased in feet up to the time of seeing him in July, 1912. The feet were then quite painful, and he suffered great distress in walking. The X-Ray revealed spurs or outgrowth of bone on the under surface, and back of the os calcis of both feet (Fig. 2), and he was unable to work.

At examination nothing was grossly apparent as a causative focus of infection, and as the spurs required removal for their mechanical effect, I assured the patient their removal could only give temporary relief unless the cause could be determined and removed, and requested that in order to allow time for investigation, he be prepared to remain in the hospital a few days for that purpose.

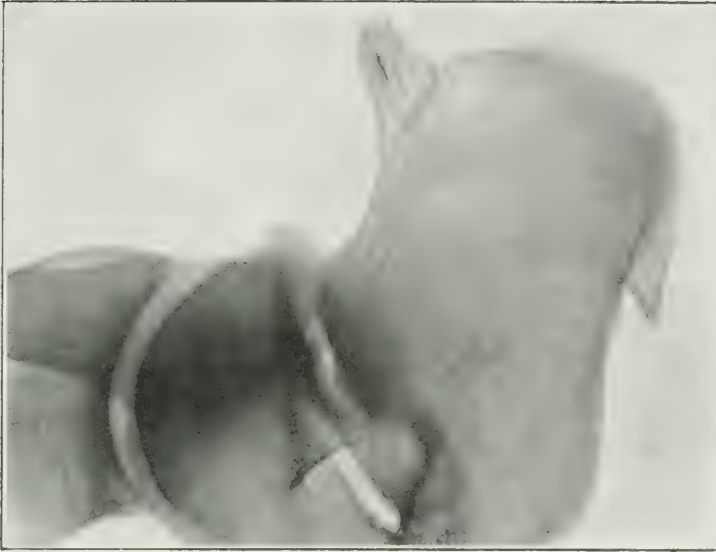


Fig. 2.

Spurs in Arthritis. X Ray of one foot with pencilled portion illustrating other foot of patient.

All the functions of the patient seemed quite normal, and, by exclusion, suspicion rested on a gold-crowned tooth, which was ordered removed, owing to the congested state of gum adjacent, and the minute glandular swelling on the buccal surface opposite.

The patient mildly objected to losing the crown, saying it had been on for six years, and never troubled him. However, six years' service was considered a reasonable reward, and the patient was sent to the dentist for its removal, and a report of the condition found. The dentist's report was that it was the most filthy cavity he had ever opened, exuding debris, pus, and confined gases, which were sufficiently strong to be obnoxious even to the patient himself, and to elicit his comment that "he guessed the doctor was right, but that was a long way from the heels."

During the three weeks he remained in the hospital following the removal of spurs, all his rheumatic pains left him. On leaving he was advised to have the remaining part of the tooth extracted, which revealed a small abscess at the base. Four weeks later he reported as being quite well, except for very slight tenderness at point of operation, and has been following his regular occupation without complaint ever since.

Again, the question of bridges I will not discuss further than to say that I occasionally see such dentrifices which I consider quite an interference with a clean, healthy mouth. I, however, take the liberty to quote the opinion of a dental authority on the question (2), who says: "Artificial plates (dentures) are at times not above suspicion; especially is this the case when roots of carious or even sound teeth have been left in the jaw, and the whole covered over with a plate. Here again, ulceration, chronic inflammation, and septic absorption take place, but a less obvious condition may be present. The bands or clasps for retaining the plates often cause ulceration and damage to the soft tissue, and even in a well-fitting denture, most frequently in the lower jaw behind the incisor teeth, large inflamed areas may be found, due to the mere pressure of the plates on the gums, already lowered in vitality by the pressure of infected processes along the gum margins.

The following history of a rheumatic affection from this cause reported by the same authority agrees in principle with some under my own observation, and illustrates the point.

The patient, a man of 38, was suffering from acute pain and swelling in both knees and both feet, ulnar deflection of both hands, and acute pain and swelling on the dorsal aspects, fluid and deformity of the left elbow joint, and of the left shoulder blade, and anaemia and neurasthenia, partly owing to the constant pain, and partly toxic. The patient had been under all sorts of treatment, residence at Continental and English spas, had been to the Canary Islands, had taken vast quantities of iodide of potassium, had had massage, electric baths, ionisation and "Christian Science," and all with no avail.

His mouth was a veritable gold mine, he had four bridges, two in the upper and two in the lower jaw, and four gold crowns in addition to the bridges; pus was welling up from his gums in all directions. The builder of the bridges told him he could do nothing for him, as he had rheumatism in his gums. He was treated by the removal of all the crowns and bridges, and by vaccines made from his own organisms. He made a slow but steady recovery, and is now able to resume his ordinary avocation, which he had been obliged to give up for three years. It is only fair to say that the expression in the above quotation, that the condition was due to rheumatism of the gums, might only be expected

from one who would insert such faulty work.

I have endeavored to show, by a few specific cases, the definite connection which diseased condition of the teeth have in causing rheumatism.

While this is a frequent cause, and important to be recognized, a more frequent cause, and one sometimes difficult of recognition, is that condition of the gums and alveolar process usually described by the term—*Pyorrhoea Alveolaris*.

This term, however, has a wide range, from that of a simple gingivitis to an osteoitis or osteomyelitis, sometimes even to the extent of causing decay and destruction of a considerable portion of the alveolar process.

With pyogenic bacteria present in the mouth in such quantities as there must be when such a condition exists, being swallowed with every drop of saliva, and with every mouthful of food, and add to this the absorbing surface presented to the lymphatic and circulating system—for conveyance of their toxic product, is it possible to conceive of a healthy body, which harbors such a hotbed of disease.

The patients which we see in this condition are usually those with long-standing rheumatic conditions, varying from months to thirty and more years, and presenting varying degrees of disability, with a large majority severely crippled and often almost complete invalids.

In these severe cases so much destruction has taken place that even though the cause be recognized, complete recovery could not be hoped for, but even in some very severe conditions a recognition of this cause and its treatment by proper dental means, and vaccine therapy, relieves pain so effectively that orthopedic methods for correcting existing deformities may be conducted with very little distress to the patient, while previously they would have been unbearable.

Many such severe cases with this disease as a causative factor might be reported, but their gain, while marked, and of great satisfaction to the patient, is as yet too far short of perfection to be conclusive. I therefore choose to report a moderately mild case from the rheumatic standpoint.

Patient, referred by Dr. J. H., age 28, had an attack of rheumatism about three years ago, affecting back and shoulders, which troubled him for some months, but gradually subsided. Had another attack in January, 1911, during



which shoulders, hip, right knee and feet became involved. With this attack he also had quinsy, and on his doctor's advice, had the tonsils removed. Following this there was great improvement in his rheumatic condition, but it did not entirely clear up. When seen July, 1912, he was unable to work, due to the painful condition of the feet, and the right foot particularly was rigid, swollen and painful, and on attempting manipulation, adhesions could be heard giving away. His skin was particularly muddy in appearance.

On examination the gums were retracted, and pus could be seen oozing from every socket. The gums bled with the slightest pressure. An autogenous vaccine was prepared, dental treatment, local treatment for joints, with proper shoes to correct bad position, general instruction as to diet, etc.

In eight weeks the patient returned to work, and has not lost a day since. His feet are so flexible he takes some pride in showing them, he has gained ten pounds in weight, the muddy appearance of the skin is gone, and he claims to enjoy life to a degree unknown for several years past.

In this patient the teeth themselves were sound, and the gum condition obvious. In a considerable portion, however, one might easily overlook a pyorrhoeic process, as it may only involve a few teeth, or, as in a patient observed a few weeks ago with arthritis of the elbow, only the inner surface of the gums were apparently involved. This possibility of oversight, and the association with rheumatism, is again well illustrated by Goadby.

History: Patient, a man of forty, had sudden attack of pain behind left ear, progressive stiffness, and muscular rheumatism, and stiffness of the right shoulder and right hip joints. Ten days later, rigor, temperature 102 degrees F., and evening temperature of 100 degrees F., for two or three weeks, which gradually subsided. Three months later another acute attack, with fever, pains in back of head and neck, lasting five weeks. An X-Ray photograph of the chest was taken, and it was thought that the case was one of early tuberculosis. The patient was sent to a sanatorium, where, however, he derived no benefit and left. He was in constant pain, unable to move his head, and had constant attacks of fever at nights, the temperature running up to 100 degrees F., falling to sub-normal in the morning. He became wasted, losing more than a stone in weight, and had become greatly depressed mentally, and had to give up his work.

Hyperaesthesia over all cranial nerves. The patient could only walk with difficulty.

The molar teeth had been lost on both sides in both jaws; the patient resented any suggestion that his mouth was at fault, as he had recently seen his dentist, who had pronounced his gums and teeth quite sound, and the gums appeared normal in color. Careful examination with a fine platinum probe brought to light several deficiencies between the remaining teeth and passing down to the bare bone, and microscopically pus was demonstrated. A vaccine was prepared and inoculations were performed. The patient made an uninterrupted recovery, the temperature ceasing to rise at night after two or three inoculations. After six months the inoculations were discontinued, and a slight relapse took place. The vaccine was therefore continued for a further six months, and the patient made a complete recovery, and has remained perfectly well since.

Such conditions as reported above are among those who came for treatment because of rheumatic conditions. I now wish to refer to and report briefly the summaries of a very valuable paper (3) (by Dr. Medalia, of Boston), where treatment was instituted for the pyorrhoea as such, and the cure of which in a great proportion resulted in a cure or great improvement of various accompanying systemic disorders. His paper presented the result of a great amount of work, and confirms the view that disease of the mouth and pyorrhoea especially is accountable for many chronic system disorders, and may be, and I believe is, responsible for many other human ills, both acute and chronic, not yet definitely associated.

When we consider chronic skin disease, such as psoriasis, eczema, the blood anaemias and leukaemias, nervous disorders, as the disseminated scleroids and progressive muscular atrophies, should we not more constantly look for a cause? Should such unhealthy conditions be present even though in our mind, having a remote or no relation to the disease for which we may have been consulted, it is our duty to advise and urge that any unhealthy condition should be corrected. This is imperative to the physician, and the dental surgeon should be as keenly alive to the importance of his work, and the effects a diseased mouth has on the system. If this were understood we would not so often get the reply, "my dentist noticed that, but said he could do nothing for it," now so frequent when recommending treatment for pyorrhoea.

Within the present month I have been given that reply by three different patients in three different towns in the province, and it is a common occurrence.

*Dr. Medalia's summary of treatment is about as follows—*

1. Vaccine of immuno therapy, usually autogenous combined with stock vaccines.

2. Local treatment by dentists.

3. Systemic, consisting mainly of regulations of diet, plenty of water, at least two quarts daily, and, in the case of intestinal complications, lactic acid milk.

#### 115 CASES REPORTED.

The results are given as follows :

		PERCENTAGE			No. of Cases		
Cases		Cured	Imp.	No. Imp.	Cured	Imp.	No. Imp.
Incipient,	14	92	8		13	1	
Mod. Adv.	16	93	7	—	15	1	
Far Advanced	85	43	47	5	37	40	4

Of far advanced, three dropped out, and of one no record was obtained.

The complications of systemic diseases in various groups were as follows:—

Incipient, 14 Complications.	Mod. Advanced, 16	Far Advanced, 85
4 Rheumatism and Gastro Intestinal	4 Rheum and Gastro Intestinal	45 Rheumatism
3 Gastro Intestinal	3 Gastro Intestinal	42 Gastro Intest.
2 Asthma	2 Rheumatism	4 Eczema
1 Rheumatism and Asthma	2 Chronic Ferunculosis	4 Post Nasal Catarrh and Chronic Sore Throat.
1 Chronic Catarrh	1 Asthma	3 Chronic Ferunculosis
11 Secondary Anaemia	1 Chronic Sore Throat	3 Nephritis
	1 Nervous Breakdown	3 Urticaria
	2 No general symptoms	2 Diabetes
All were relieved of systemic symptoms when under local treatment.	In rheumatic cases pain responded to vaccine therapy.	1 Purpura Hemorrhagica
		6 No general symptoms

Of the far advanced, most had a combination of two or more of the above-named symptoms. Almost all gastro-intestinal symptoms were relieved or cured by diet, lactic acid milk or vaccine. Twenty-three of the rheumatic cases were

cured, eleven improved, others discontinued or were beyond hope.

The more frequent complications were as follows:—

	Rheum Disease	Gastro Intest.	Skin Affections	Chronic Catarrh
Incipient	35 %	50	14	7
Mod. Advanced	38 „	50	12	6
Far Advanced	53 „	50	13	5

These results speak for themselves. The last table is, I think, suggestive in showing the preponderance of gastro-intestinal symptoms over rheumatic in the incipient cases, and the marked increase of rheumatic symptoms in the far-advanced. This seems most natural in that the intestinal is in direct line with infection, and would naturally suffer first.

In the conditions first described, involving the teeth alone, to observe and remove the cause will often result in a cure. In the latter condition of pyorrhoea, sufficient evidence is at hand to show it is a curable disease, but not without the skill and enthusiastic co-operation of the dental surgeon. With such recognition and co-operation, not only are cures made possible, but, what is infinitely more important, is the prevention, the consequent saving of many from a life of suffering and invalidism, and not a few from Homes for Incurables. At the present time a large proportion of the inmates of such institutions are there as the results of rheumatism. Of fifteen such patients examined recently in one institution, eleven could have been due to mouth infection. He who has the power of preventing such disastrous results surely has a great mission to perform, far beyond the accumulation of wealth, and should be willing to make great sacrifices to that end. It is a combined responsibility. Is the dental profession willing to assume its share.

In my own work on this subject I am indebted for their kindly and enthusiastic co-operation to Dr. G. W. Ross, for his conduct of the vaccine therapy; to Drs. G. A. Richardson, A. F. Webster and Wallace Secombe, for treatment and reports on teeth conditions, and to Dr. Andrew J. McDonagh for his conduct of severe cases of pyorrhoea.  
12 Bloor Street East, Toronto.



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### *School Lunches Important.*

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**C**LOSELY connected with good teeth and relative to the good health of school children is the movement for school lunches. There was a time in the far past when anything left from breakfast was tied up and handed to the child to take to school for lunch.

Recognizing that highest efficiency cannot live long in an ill-nourished body, the High School alumni of Newark, New Jersey, has worked out a plan that enables every child to eat a good lunch and to eat it properly. The lunches are served on the cafeteria plan, which dispenses with waiters. Five hundred lunches are served daily, and they cost from one penny to 35 cents a piece. The equipment was furnished by the Board of Education and it is maintained by the alumni.

A graduate in domestic science is in charge of the cafeteria, and she has a well-balanced menu and of good quality. Only the best food is bought, and the store room is open to inspection of the Health Board or the parents of the children. The kitchens are also inspected, and a few boys and girls are paid small sums to keep them clean.

This plan is being successfully carried out and the model is worthy of imitating.

Proper food, properly prepared and properly masticated, is a large factor in the solution of dental caries. The school "lunch room" would be an ideal place for instruction in mastication and the care of the teeth.

## ***National Dental Registration and the Dominion Dental Council.***

BY WALLACE SECCOMBE, D.D.S.

**E**FFORT has been frequently made, both in Canada and United States, to arrange for National Dental Registration without infringing Provincial or State rights. In Canada the Dominion Dental Council and the Medical Council of Canada mark respectively the progress of the dental and medical professions in this regard.

The Dominion Dental Council was organized ten years ago, and during this period has rendered great service in improving dental examinations and in fixing and maintaining a dental educational standard of which the profession in Canada may well feel proud. In the matter of Dominion Registration the D. D. C. has not accomplished so much, having been greatly handicapped in that all the Provinces have not been sending representatives to the Council. There now seems little doubt, however, that all the Provinces of Canada will soon be represented upon the Dominion Dental Council, and this body will then be, in fact, a Canadian National Council.

There remains much for the Dominion Dental Council to do both in the matter of Dominion Registration and in the maintenance of dental standards. For the accomplishment of these purposes it might be well for the Dominion Dental Council to consider the advisability of the following change in policy:

That the Council make periodical inspection of all Canadian Dental Colleges, noting the matriculation requirements, the course of study and the pass standard of efficiency required;

That those colleges found to be maintaining a standard at least equal to the requirements of the Council be placed upon an Approved List of colleges;

That all graduates of dental colleges situated in an agreeing Provinces and entered upon the Approved List, be given a Dominion Dental Council certificate upon payment of the prescribed fee, without further examination. If some such policy were adopted the general effect would undoubtedly be to enhance the value and influence of the Dominion Dental Council both as to Dominion Registration and the maintenance of high professional standards.

The present regulations of the Dominion Dental Council would meet the situation satisfactorily if *all* Canadian dental students passed the Dominion Dental Council examination. Many do not write on the Dominion Dental Council because of their intention to practice in their native province or for some other sufficient reason. These men seldom take the D.D.C. after leaving college. The D.D.C. is usually taken concurrently with a regular college course, and if the college examination be quite equivalent to the D.D.C. standard, what is the advantage of compelling Canadian students to take the additional examination?

The result at present is that many men are shut out from the D.D.C. and consequently the Council cannot be said to meet the practical requirements of a National Registration Board. From the viewpoint of the protection of the public, a man who is qualified to practice dentistry in one province ought to be qualified to practice in another. It is only reasonable to provide for Dominion Registration so long as Provincial rights are left intact.

Under the plan outlined above the several Provincial Boards would, needless to say, continue to hold their regular examinations for the examination of graduates without D.D.C. standing. These candidates would thus be enabled to practice in the Province whose examination was passed, but would not be entitled to Dominion Registration. The status of the Provincial Boards would, of course, remain precisely as at present.

The D.D.C. could better uphold dental standards in Canada by maintaining an Approved List of dental colleges rather than by following the present method of holding a special examination. There would, too, be the added advantage of preventing an unfortunate type of college competition that results in a lowering of standards. The vast majority of dental colleges in United States to-day would be four-year schools were it not for the comparatively small number of schools that would surely continue a three-year standard and thus attract prospective students. Such a danger might some day confront Canadian dental colleges and would be entirely overcome by the Dominion Dental Council fixing and unifying the minimum college standard in Canada.

Dominion Registration might, in effect, be accomplished by a mutual arrangement among the Provinces by Provincial Reciprocity in dental graduates, but under such a plan there would be maintained no uniform dental standard

among the provinces. It requires a national body, such as the Dominion Dental Council to fix a national standard of efficiency.

If the Dominion Dental Council would accept graduates of approved Canadian colleges without further examination, the effect would be to make the Dominion Dental Council a real practical Dominion Registration Board and open the Canadian field to Canadian dentists. The effect would also be to raise and unify Canadian dental college standards.

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### *The Foundation of a Nation's Health.*

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THE care of the teeth in the public schools is the foundation of the health of the nation." This statement was made by the President of the International Commission for Mouth Hygiene at the meeting of the International Dental Federation in Stockholm last year. He continued:

"The air we breathe should be pure; the food we eat, free from germs, and the mouth, through which air and food enter the body, should be clean. A foul mouth infects the air and food, which in turn infect the lungs, stomach, intestines and the whole system, and to a greater degree, in proportion to the weakness of the body.

"In childhood the danger is greatest. Nearly all of our children have decayed teeth. They are seats of decomposition in the mouth, and carriers of disease germs that will find their way into the body and restrict its growth, or produce slow decline, and cause an early death. Fortunately, such is not always the case, for then all children would become ill, and die young.

"The increase in the number of public school dental clinics in many countries, and their recognition by the authorities, fills us with hope and gives us courage to persist in proclaiming that the care of the teeth in the public schools is a real help towards counteracting infectious diseases, especially tuberculosis.

"Children are the greatest capital of any nation. When they are strong and healthy, much of value to the world is gained, which would be lost through sickness and premature death."



## *Oral Hygiene Nursery Rhymes.*

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THE following are being used in the Junior Grades of Toronto Public Schools as a means of interesting the younger pupils in the regular care of their teeth:—

### *Little White Ponies.*

Little white ponies, on a red hill,  
Work for me with all their will,  
I brush them and clean them to keep them from ill,  
My little white ponies that live on the hill.  
If I should forget them they'd gallop away  
Where I could not find them by night or by day.  
So after each meal, while they're standing quite still,  
I'll brush my white ponies that live on the hill.

### *Shining Pearls.*

When rosy lips are opened wide,  
What is this we see inside?  
Two rows of pretty shining pearls  
For little boys and little girls.  
If we would keep them brighter still,  
Let us brush them with a right good will,  
Brush them in the morning and again at night,  
So we'll keep these pearls pure and bright.

### *Little White Sheep.*

Tune—"Auld Lang Syne."  
I have a little flock of sheep,  
I brush them white and clean.  
They hide behind two scarlet gates,  
And laugh when they are seen.  
Chorus—  
I love my pretty flock of sheep,  
I love to keep them clean.  
They peep behind two scarlet gates,  
And laugh when they are seen.

*Pearls.*

Tune—"Twenty Froggies Went to School."

Twenty pearls, pure and white,  
Laughing when they see the light.  
Twenty pearls in a row,  
Keep them whiter than the snow.

Twenty teeth in a row,  
Shining white as the driven snow.  
How shall I keep them pure and white?  
Brush them morning, noon and night.

Pretty little white teeth, all in a row,  
Pretty little white teeth, how do you grow?  
(*Little white teeth answered:*)  
"If you wish us to grow,  
You must brush us well, twice each day,  
Don't you know."

Brush us up and brush us down,  
Then all the crown.  
Brush us inside, and brush us out,  
And mother will tell you what it all's about.  
If the toothache you'd keep away,  
You must brush us well twice every day.

*White Ponies.*

Little white ponies, on a red hill,  
Gallop, gallop; now they stand still.  
Ready to play and work with a will,  
Little white ponies, on a red hill.

Little white ponies, what must we do  
To make you grow stronger, and take care of you?  
Carefully wash you and brush you so well (I will)  
Little white ponies, on a red hill.

## *Need for Dentists in Canada.*

**I**N the January number of ORAL HEALTH there appeared an article pointing out the need for more dentists in the Dominion of Canada.

We have now compiled from official and other sources a complete list of dentists who are actually in practise in the Dominion of Canada, also the estimated population as of January 1st, 1913. These figures are as follows:—

Province.	No. of Dentists.	Population.	Ratio.
Alberta .....	103	457,600	1 to 4442
British Columbia...	116	454,670	1 to 3919
Manitoba .....	125	517,810	1 to 4142
New Brunswick ....	79	368,480	1 to 4664
Nova Scotia .....	115	508,930	1 to 4425
Ontario .....	894	2,564,670	1 to 2868
P. E. I.....	18	93,720	1 to 5206
Quebec .....	227	2,052,460	1 to 9041
Saskatchewan .....	81	575,360	1 to 7103
Yukon and N.W.T..	3	25,700	1 to 8566
Total .....	1761	7,619,400	

Taking Canada as a whole, there is a ratio of one dentist to 4,326 of population.

For purposes of comparison the 1912 United States figures, as published by "Polke's Dental Register" are of interest. These have been tabulated according to States and show the ratio of dentists to population in all the States of the Union. The United States figures are as follows:—

Province.	No. of Dentists.	Population.	Ratio.
Alabama .....	541	2,138,093	1 to 3950
Alaska .....	34	64,356	1 to 1892
Arizona .....	64	204,354	1 to 3163
Arkansas .....	359	1,574,440	1 to 4356
California .....	1903	2,377,549	1 to 1249
Colorado .....	492	799,024	1 to 1624
Connecticut .....	611	1,114,756	1 to 1824
Delaware .....	80	202,322	1 to 2529

Florida .....	273	752,619	1	to	2756
Georgia .....	630	2,609,121	1	to	4141
Idaho .....	176	325,594	1	to	1849
Illinois .....	3203	5,638,591	1	to	1760
Indiana .....	1245	2,700,876	1	to	2169
Iowa .....	1198	2,224,771	1	to	1857
Kansas .....	834	1,690,949	1	to	2025
Kentucky .....	786	2,289,905	1	to	2913
Louisiana .....	454	1,656,388	1	to	3648
Maine .....	403	742,371	1	to	1842
Maryland .....	578	1,295,346	1	to	2241
Massachusetts .....	2666	3,336,416	1	to	1619
Michigan .....	1421	2,810,173	1	to	1977
Minnesota .....	933	2,075,708	1	to	2224
Mississippi .....	343	1,797,144	1	to	5224
Missouri .....	1377	3,293,335	1	to	2391
Montana .....	214	376,053	1	to	1756
Nebraska .....	637	1,192,214	1	to	1871
Nevada .....	45	81,857	1	to	1819
New Hampshire ....	217	430,572	1	to	1984
New Jersey .....	928	2,537,167	1	to	2734
New Mexico .....	75	327,301	1	to	4364
New York .....	4270	9,113,614	1	to	2134
North Carolina ....	430	2,206,287	1	to	5130
North Dakota .....	179	577,056	1	to	3223
Ohio .....	2190	4,767,121	1	to	2176
Oklahoma .....	326	1,657,155	1	to	5083
Oregon .....	449	672,765	1	to	1498
Pennsylvania .....	3229	7,665,111	1	to	2373
Rhode Island .....	278	542,610	1	to	1951
South Carolina ....	360	1,515,400	1	to	4209
South Dakota .....	200	583,888	1	to	2919
Tennessee .....	560	2,184,789	1	to	3901
Texas .....	940	3,896,542	1	to	4145
Utah .....	208	373,351	1	to	1795
Vermont .....	149	355,956	1	to	2389
Virginia .....	449	2,061,612	1	to	4593
Washington .....	611	1,141,990	1	to	1869
West Virginia .....	375	1,221,119	1	to	3259
Wisconsin .....	1181	2,333,860	1	to	1977
Wyoming .....	57	145,965	1	to	2560

Total .....	38,900	92,006,625
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Taking the United States as whole, there is a ratio of one dentist to 2,365 of population.



The above statistics show conclusively that even at the present time the number of practising dentists in Canada is short of actual requirements. In the Province of Ontario there were one hundred more dentists in practice ten years ago than there are to-day notwithstanding the large increase in population, as well as the greater demand for dental service. How can this condition be corrected in Ontario if in a graduating class of fifty students in the Royal College of Dental Surgeons, twenty-five are planning to go West?

This whole question is vital to the dental profession. It will be impossible to maintain the present dental standards in Canada if the public demand for dental service be not met.

The state has imposed certain rights and privileges upon the dental profession, and has entrusted to it the care of the dental needs of the public. The profession would be untrue to its trust if it did not make every possible effort to augment the present ranks of the profession to the end that the public may be well served.

The solution lies largely in the hands of the dentist himself. Every dentist has a duty to perform in this matter, and should be ever alert to recommend the best type of young manhood to enter the profession and join in the dental campaign for good health which is being so successfully waged by the dental practitioner.

If the profession in Canada is alive to its duty in this matter, all our Canadian dental colleges will have double their present enrollment, and even this increase will not of itself adequately meet conditions five years from now.

### ***International Movement for Mouth Hygiene.***

BY DR. ERNST JESSEN, OF STRASBURG.

**D**R. ERNST JESSEN, of Strasburg, who has often been noted as the pioneer in Europe of hygiene of the mouth, presents in the January issue of the *Internationales Archiv für Öffentliche Mundhygiene* a suggestion for the establishment of an international commission for mouth hygiene, bringing to the attention of the people that such a movement is as important as the estab-

lishment of a Palace of Peace and is not inferior to the Red Cross in its relations to the benefit of man.

“The importance of a rational mouth hygiene as a benefit to the health of the whole body has been recognized only very recently,” he writes. “In the United States the first dental school was established at Baltimore in 1839 and the institution remained unique until 1863, since which time numerous new colleges have sprung into existence almost every year, so that the country can now count not less than sixty such institutions.

At about the same time, the early sixties, there were in Germany some pioneer movements to include dental hygiene among the factors in the health of the people. In 1861 there was the Central Association of German Dentists, which at its meeting in Dresden decided to offer a prize for the best statement on hygiene of the teeth and mouth. Süersen was the prize winner and his essay has been translated into all the civilized languages.

Dr. Jessen next outlines the accumulation of statistics by different countries which were first assembled in Great Britain in 1890, at which time the first school dentists had already just been appointed in that country. The reports showed that seventy-seven to ninety-five per cent. of the school children were suffering from diseases of the teeth, while in Sweden the figures were even more alarming. Nine years later came the publication of statistics for the United States with 92 per cent. while Switzerland in the next year—1900—found from ninety to one hundred per cent. of the children with defective teeth.

It was but natural that science should work for the better appreciation of dental hygiene. In 1887 Hilscher in Vienna had been proposing the introduction of dental inspection and work for school children, and in 1894 this was demanded by Ritter before the Association for Internal Medicine at Berlin. In Germany statistics were gathered, and in 1880 these were first published. Already for two years, since 1888, Dr. Jessen at Strasburg has been treating school children and soldiers gratis. This was the first step from theory to practice.

Almost at the same time the dentists of Hanover began, at the suggestion of Kühns, similar work, and then simultaneously at Strasburg and Darmstadt there were established the first dental infirmaries for school children.

In 1900 the *Fédération Dentaire Internationale* was founded in Paris for the promotion of dental science, its instigator being Dr. Godon, and to-day this association has its delegates in no less than twenty-four countries of the world. In 1902 the federation formed a special mouth hygiene committee, the duties of which have been largely educational, and to do missionary work towards the introduction of oral care into the different countries. National associations have been formed in the different countries and the parent federation has been successively under the patronage of Frederick VIII. of Denmark, King Christian X., Queen Dowager Emma in Holland and in France the Minister of Public Worship and Education. In Sweden Gustaf V. appointed a royal commission, and by this time dental hygiene had been introduced in almost all the towns of the country.

In the later years the economy of the whole movement has been abundantly proved. In Germany it was shown that there is an annual loss of more than fifty million dollars due to imperfect teeth and diseased mouths, although at the time of the estimate there were already established one hundred and twenty dental clinics. The importance of the movement has been recognized as a business asset. At Essen the great firm of Krupp has established a public dental infirmary for its workmen and their families, and the same firm has endowed at Bendorf, Austria, a dental clinic for school children. In the same way other business interests have established clinics in Berlin, while the life insurance companies and sick fund organizations have invested of their moneys in their own dental establishments.

Dr. Jessen pays tribute to the Forsyth Dental Infirmary of Boston, which, he says, "owes its foundation to a gift amounting to \$1,500,000 made by Forsyth for himself and his deceased brother. It is the largest clinic for school children in the world."

The idea of peace has found a lasting benefit in the Palace of Peace which is to be opened at The Hague the present year. The hygiene of the mouth, which is not inferior in its strivings to those of the Red Cross, is still in need of a founder who, convinced of its lasting and far-reaching benefits to civilized man, will establish a home for it, which shall serve to concentrate and correlate effort and energy and be the clearing house for all knowledge relating to this, the most important hygienic movement of the times.

## *Alcohol and Tuberculosis.*

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**J.** JOHANNESSEN, B.A., M.D., writing in the *Public Health Journal*, upon the subject of "Alcohol and Tuberculosis," illustrates the effects of alcohol on some of the vital organs of the human body, and shows at the same time how, by such influence, the road is cleared for the bacillus tuberculosis.

When alcohol enters the stomach it is very quickly absorbed by the veins in the stomach wall to reach every part of the body. The vasocontractors which govern the muscles in the walls of the blood vessels so as to regulate the amount of blood sent to each part of the body, according to its needs, are partially paralyzed by the poisonous action of the alcohol; the muscles of the blood vessels relax, which means that the vessels dilate and the blood flows through them more easily than it does in normal conditions. In order that the heart may perform its functions adequately it must meet with certain amount of resistance when it pumps the blood through the arteries. Now the vasocontractors are paralyzed and the normal resistance consequently abolished. The heart beats faster and does more work than it is intended for, and we have the state of excitement which I need not describe.

After a while the heart becomes tired from overwork, and sick from the effects of the alcoholic poison acting upon it. It is the same with the individual organ as it is with the individual person; when a person becomes tired and sick he or she almost gives up work; so with the special organ—the heart in this case—it slows down and has difficulty in forcing the blood through the body; consequently the whole system becomes languid, and the individual is in a state of collapse or stupor, partial or complete. The patient gets gradually over the spell; the poison is eliminated through the kidneys, the skin, and the lungs, but all this means extra work—overwork; it means an abnormal—subnormal condition, it means temporarily *lowered vitality* with permanent effects.

The patient partakes of the poison again, and the process is repeated, with the same phenomena, same overwork for the system, same subnormal condition and *lowered vitality*.



*ity.* The coronary arteries, as well as other arteries in the body, are affected in similar manner as the heart from overwork and poison; they become thickened from overgrowth of connective tissue followed by or associated with fatty degeneration, which means subnormal tissue, and consequently *lowered vitality* of the organ. Calcareous deposits are formed in the intima, even necrosis and abscesses may occur; the arteries lose their elasticity; the heart has to use an extra force to pump the blood through them; this means again an overwork for the heart, overgrowth of the heart muscles takes place, so that it may even weigh three times its normal weight. After the hypertrophy follows fatty degeneration, which means that the elements of the heart muscles are in part converted into elements of *lower grade*.

These conditions lead to many grave phenomena; the breathing become difficult, the digestion is impaired, the blood pumping station, the heart, and the blood carrying channels, the arteries and veins, are unable to perform their functions properly; the exchanges of gases do not take place in a proper manner; the life-giving oxygen is not taken in sufficiently, and the death-producing carbon dioxide is not eliminated. We all know what that means.

It means lowered vitality of the individual, it means favorable soil for the bacillus tuberculosis, it means an invitation to consumption. Alcohol is one of the truest and closest friends of tuberculosis. Such are the effects of alcohol on the heart.

Now we will see how it affects the lungs. The air cells of the lungs are largely composed of aqueous albumin; one of the main characteristics of alcohol is its great water absorbing power; consequently it absorbs the water from the lung tissue; this fact, as well as the poisonous action of the alcohol, causes a weakened condition of the organ. The main function of the lungs—the exchanges of gases—is interfered with; the blood is not provided with the required amount of oxygen, and, being overloaded with carbon dioxide, is not a normal one; has not the life-protecting power which it is intended to have. This means *lowered vitality, suitable soil of bacillus tuberculosis*, which we will inhale occasionally more or less.

It was stated above that the muscles of the heart were deprived of their normal working capacity through degeneration caused by overwork and alcoholic poison; the same is true regarding the muscles of other organs in the human

body. The diaphragm and the intercostal muscles may be and very often are involved. This fact, in addition to the impaired action of the lungs themselves, is the cause of diminished force of breathing; and when we realize that full breathing is one of the main factors in the treatment and prevention of tuberculosis, then it is readily understood that the above described condition *lowers the vitality, invites tuberculosis*. It is also a well-known fact that those who partake of alcohol are not only specially predisposed to pneumonia, but with them it is generally very grave.

And why so? Because the tissue of the lungs are not normal; they are subnormal; they are diseased from the alcoholic poison; they are *lowered in vitality; they are suitable soil for germs of any kind*.

### ***Dentistry in Great Britain.***

THE Dental Act of Great Britain does not make it an offence *to practise the profession of dentistry*, but it is an offence *to use the name or title of "dentist" or of "dental practitioner,"* or any name, title, addition or description implying that the individual is registered under the Act.

The result is that a myriad of unqualified and unregistered men are performing dental operations and keep within the letter of the Act by not calling themselves dentists. These men are giving the British people a very erroneous idea of the ideals and practices of modern dentistry. It is the people who are suffering in health and money through the wretched dental service they are receiving at the hands of quacks and incompetents.

An illustration of how such an unregistered individual circumvents the Act and practises dentistry is shown in the following advertisement:—

"J. E. Thompson, Central Dental Works, Birmingham, England; manufacturers of artificial teeth at the following prices:—Upper or lower set, 20s each; per tooth, 2s each; repairs, 2s each; on receipt of 2s to cover cost we will send apparatus and instructions for taking impressions."

The patient takes his own impression and the "works" finishes the case.

A section of the British Act provides that a registered dentist is exempt (if he so desires) from service on all juries and inquests.

It is also of interest to note that the Channel Islands and Isle of Man each have special Dental Acts of their own.



This Department is Edited by C. A. KENNEDY, D.D.S.

*Helpful Practical Suggestions for publication, sent in by members of the Profession, will be greatly appreciated by this Department.*

*Address. C. A. KENNEDY, D.D.S., 2 College Street, Toronto.*

ALCOHOL IN PLACE OF COCAIN AS AN OBTUNDANT.—Drill a small pit in the dentine and use a 25% solution of alcohol in distilled water under a high pressure instrument. Repeat this procedure if sensation returns. If the pressure be increased too rapidly pain will be produced by the pressure, but by using care the pulp can be thoroughly anesthetized without subsequent death of the organ.—*E. B. Lodge, Dental Summary.*

TO REPAIR GOLD CROWNS. Holes worn in gold crowns may be repaired by grinding out hole to give good margins. Then fill in with inlay wax, invest crown with wax in position and cast, using same karet gold as the crown. Flow solder over plug on inside of crown and polish. The repair will not be visible.—*J. W. Gibson, Dental Review.*

REMOVING ENAMEL.—Removing enamel on occlusal surfaces of teeth in preparation of crowns, use two or three or four knife-edged carborundum discs mounted together and cut grooves as deep as the thickness of enamel to be removed. By keeping the discs moist, this can be done almost entirely without pain. With a chisel placed in the grooves, the entire occlusal surface can be chipped off.—*Herman A. Mares, Dental Review.*

TO POLISH PORCELAIN TEETH THAT HAVE BEEN GROUND.—In the handpiece of your dental engine put as fine a carborundum or emery stone as you can get and grind porcelain until it is as smooth as can be made with stone; then use sandpaper discs from coarse to fine until you can use cuttlefish discs—use plenty of them—finally use a buff and pumice and you will get the desired results.—*Clifford M. Roberts, Dental Digest.*

A PROSTHETIC USE OF ALUM.—A patient aged forty came to see me whose oral condition was as follows: Upper jaw edentulous—teeth extracted about three years before; gums badly shrunken and quite spongy. The patient had had nine dentures made by as many dentists; none, however, would stay up over a week. I made a set, with the same result. The patient came in again, when I had him rinse his mouth with a strong solution of alum, one-half ounce of lump alum dissolved in three ounces of warm water, the patient rinsing the mouth and retaining the solution about one minute. This caused the gums to shrink, and while the condition obtained, I took a plaster impression and bite. I then made a denture that has given entire satisfaction for the past six months. The idea was to cause as much shrinkage as possible in the spongy gums, so that when normal conditions returned the plate should fit tightly. This plan will be found worth trying.—*R. B. Moore, The Dental Cosmos.*

CASTING AGAINST PICK UPS.—I wish to tell you one more principle about gold, and casting it to other pieces of gold which are in the flask. Without any experience except that gained by blow-pipe work, the first thought which seems to come to dentists when they wish to cast against gold is to bring both the golds to as near the same temperature as possible. This is absolutely defeating the object sought. Why? In bringing the flask and its contents up to a bright red heat you bring the enclosed metal to a temperature at which it oxidizes, and having no means of deoxidizing this surface, you do not get as perfect a union when the melted gold is thrown in as you will if you heat the case up to a temperature just sufficient to burn out the wax. And this temperature does not absolutely burn all the carbon off the enclosed gold, and as carbon is one of the very best deoxidizers, you now have your gold in the very best condition to be welded to other gold. Now, the thing to do in order to cast to this gold, is to bring your melted metal up to an excessive temperature, and you will cast in a scientific manner.—*W. H. Taggart, Dental Review.*

TO HOLD AN INLAY WHILE POLISHING.—Take a piece of bamboo with an opening about the size of a pencil or pen, and fill with modeling compound, rounding it up over the end. By warming the compound and imbedding in inlay, you can grind and polish to your heart's content. —*J. H. Blachly, Dental Review.*



## SOCIETY ANNOUNCEMENTS.

### *The Panama Pacific Dental Congress.*

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**A**S one of the attractions of the Panama-Pacific International Exposition, a Dental Congress, international in character, to be known as the Panama-Pacific Dental Congress, is to be held in San Francisco, California, beginning on the last Monday in August, 1915, and continuing for ten days.

A Committee of Organization has been perfected, including representatives from the Pacific Coast States—California, Oregon, Washington, Utah, Idaho, Colorado and Arizona.

This Committee is now actively engaged in perfecting the work of organization, including the establishment in every State of the United States and every foreign country, where dental organizations are known to exist, of Executive Committees, which shall be empowered to promote the business of the Congress by bringing it to the attention of their National, State and Local Societies, and securing memberships and contributions to the programme.

The American Society of Orthodontists and the National Dental Association, of the United States of America, have already made arrangements to meet in San Francisco in 1915 as parts of the Congress, and invitations will be extended to other dental societies to take similar action.

Over \$8,000 has already been subscribed for promotion purposes by the dentists and dental societies of the Pacific Coast States, and this fund will be increased by many thousands of dollars before the Congress meets.

Never in the history of the profession has there been so auspicious a time for holding a great dental congress, and the Panama-Pacific International Exposition Company and the Committee of Organization of the Panama-Pacific Dental Congress unite in a cordial invitation to the members of the dental profession to come to San Francisco in 1915 to attend the Congress and view the wonders of the Exposition and Pacific Coast of the United States of America.

FRANK L. PLATT, D.D.S.,

ARTHUR M. FLOOD, D.D.S.,

Chairman Com. of Organization,

Secretary.

# ORAL HEALTH.

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## EDITORIAL.

### *Toronto's Municipal Dental Clinic.*

THE last month has seen the establishment, in Toronto, of the first municipal dental clinic in Canada. While dental disease is the most prevalent of all diseases, and probably the greatest contributing factor in many others, the establishment of this clinic is the first practical recognition of health authorities in Canada of the importance of the treatment of mouth diseases, and marks a new epoch in the history of dentistry as a branch of the healing art. The recognition of the municipality of its responsibility for the treatment of dental disease upon a similar basis to that of general hospital treatment, has been brought about in Toronto largely by the efforts of the Educational Committee of the Toronto Dental Society.

— This committee has for the past three years been agitating for the dental inspection of school children and the establishment of dental clinics for the worthy poor. Dental inspection was provided for, about two years ago, by the Board of Education in connection with the Medical Inspection Department. Since that time the need of a dental clinic has become more and more apparent as a result of the work of the Medical Inspection Department.

The new clinic is situated at the corner of Grenville and Yonge streets. The equipment is of the best. The chairs,

engine and fountain cuspidor were purchased by the Educational Committee with funds provided by subscription from the dental profession in Toronto, and one most generous layman, Sir Edmund Osler. The remainder of the fine equipment and provision for salaried operators and permanent maintenance for a three-chair clinic, has been provided by the Department of Health.

The authorities have been fortunate in securing Dr. J. A. Bothwell as chief of the staff. Dr. Margaret Gordon will devote her whole time to the work, while the other members of the staff will be half-time operators.

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### *J. G. Adams, L.D.S.*

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**D**R. ADAMS is the pioneer in dental educational work in Canada. He appeared before the Toronto Public School Board twenty years ago urging the systematic examination of school children's teeth. At that time the idea was frowned down as a "fad."

Dr. Adams is seventy-four years old and still retains his accustomed health and vigor.

No member of the profession is more interested in the work of the Toronto Dental Inspector, and the successful organization of the municipal dental clinic, than is J. G. Adams—the man who first got the vision and then made many personal sacrifices that the plans advocated might be put into practice.

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Drs. Fred Coghlan and Douglas Foster were elected members of the Board of Education of Guelph.

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Within the past few weeks the decease has occurred of Dr. Edwin Forster and Dr. Jesse Mills. They will be kindly remembered by a wide circle of dental friends, and particularly by their confreres in the City of Toronto.

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Dr. Frederick Barbour, Fredericton; Dr. L. F. Bush, Winnipeg, and Dr. Lindsay, China, have accepted appointment upon the editorial staff of Oral Health. We are very glad to be able to make this announcement, and feel sure the profession will be equally glad to learn that these men are to act as contributing editors to this journal.

## Oral Hygiene Reports.

**R**EAD the following reports on the progress of the oral hygiene movement and then ask yourself: "Are there sufficient dentists to meet the public demand for dental service, and what will the conditions be five years hence?"

The need for dentists is not only a problem in Canada, but is becoming an important question in the United States as well.

*Kansas City, Mo.*

The Kansas City Dental Society has inaugurated a campaign for dental inspection in the schools.

*St. Louis, Mo.*

Pupils of the East St. Louis public schools are to have their teeth examined by members of the East St. Louis Dental Society.

*Ottawa, Ontario.*

The Ottawa Dental Society has secured permission from the Public School Board to make an examination of the pupils in two representative schools of that city. The results may be expected to show the need of the inauguration of a system of medical inspection.

*Cornington, Kentucky.*

The mouths of 460 pupils in the public schools were examined by a corps of dentists and the results tabulated and reported to the parents.

*Ann Arbor, Mich.*

Dr. Anna Dieterle, dental inspector, in reporting to the Board of Education, stated that parents and children were taking most gratifying interest in the care of the teeth.

Dr. Dieterle indicated that increasing attention was being given to the child's personal care of the teeth and an interest shown in the results obtained by the child. Short popular talks on method of brushing, proper mastication, process of decay, etc., etc., illustrated with charts and diagrams, are given periodically in the several grades.

*Pittsburg, Pa.*

Dr. T. D. Davis presided at a meeting held in Carnegie Institute Lecture Hall for the purpose of advocating the inspection of school children's teeth and the establishment of free dental clinics for the poor. The meeting was addressed



by Dr. J. E. W. Wallin, Professor of Psychology, University of Pittsburgh; Dean Chambers, of the School of Education; Mrs. E. Rauh, and Dr. Burns, Chief Medical Inspector of Schools.

*Bridgeport, Conn.*

The Board of Education has applied to the Apportionment Committee of the City Council for the sum of \$12,000 for the establishment of a clinic for "Dental Preservation and Mouth Hygiene."

*Troy, Ohio.*

At a recent meeting of the Board of Education a policy of dental inspection of all pupils was adopted. Results will be reported to the parents, who may do as they wish relative to having their children's mouth conditions corrected.

*Ogden, Utah.*

Dr. E. C. Bates, Medical Inspector of Schools, in his annual report, stated that over 50 per cent. of pupils in the Ogden schools needed immediate dental service, and that a large percentage of scholars never owned or used a tooth brush. Dr. Bates quoted an Illinois inspector, who declared that there were not enough dentists in the whole State to properly care for the school children of Chicago alone. The report outlines the best policy for the Board as one of prevention, and concludes:—

"Every decayed tooth, whether of the temporary or permanent set, is an unnatural event, and should be looked after as a possible portal of entry into the system of harmful bacteria.

"That every child is entitled to sound teeth and that where the parent is unable to provide dental care the responsibility should be assumed by society at large.

"That the teeth of school children are being sadly neglected.

"That means for further instruction of both parent and school child in dental hygiene are laudable and should be encouraged."

## Royal College of Dental Surgeons of Ontario.

### PROFESSORSHIPS VACANT

Applications, with testimonials, etc., will be received by the undersigned until April 19th, 1913, for the position of **Professor of Crown and Bridge Work** also for the position of **Professor of Dental Materia Medica and Pharmacology**, in the School of Dentistry of the Royal College of Dental Surgeons of Ontario. Duties to commence October 1st, 1913

J. B. WILLMOTT

Secretary R.C.D.S.

96 College St. Toronto

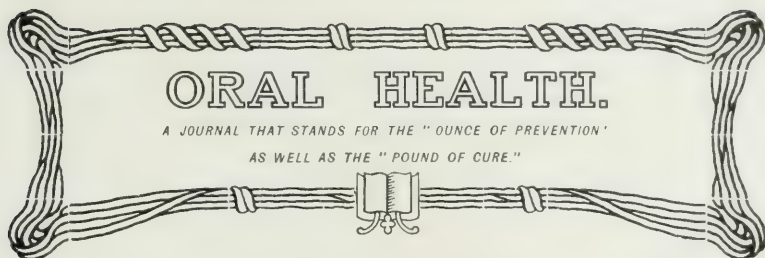
Spend as much time as you can  
with body and with spirit, in God's  
out-of-doors. —

*Henry Van Dyke*



DR. F. W. ERNEST WILSON

Medical Officer of Health, Niagara Falls



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TORONTO, APRIL, 1913.

No. 4.

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## *Rural Hygiene.*

BY DR. F. W. ERNEST WILSON, MEDICAL OFFICER OF HEALTH,  
NIAGARA FALLS.

**I**N a short review of what might be termed basic principles on "Rural Hygiene" it is first of use to remind ourselves that in the last twenty-five years hygiene and its allied subjects, sanitation, preventive medicine, comparative medicine, etc., have made rapid strides and rural populations have reason to thank the perseverance and painstaking and untiring zeal of the men and women who are daily increasing the safeguards against disease and decreasing the number of inlets by which health-attacking organisms gain their entry. The populations of cities have grown to take as a matter of course the careful quarantining against all contagious diseases, the studied inspections of food products, and of water, the modern disposal of sewage, garbage, etc. Each new scheme for health conservation has its opponents, but as time goes on it is easier to make radical changes and the public is often more ready for the improvements in health preservation than are the governments who promulgate them. Much is yet to be done, and the subject which looms large on the horizon now, i.e., prevention of pollution of our rivers and lakes of sewage, when it is eventually brought into law, it will be found that the public, that foots the bill, will be ready and willing to pay the cost. We are far yet from the ideal, but much progress has been made, and the public generally is thoroughly in sympathy with health boards in their work.



The rural districts have not kept pace with this progress. Of course the main reason for this is that the lesser number of people have taken a lesser amount of attention from health authorities, there was less disease, and hence less necessity of taking precautions against it. The rural resident, moreover, is more conservative; he is less easily reformed. His excuse invariably is that what was good enough for his father is good enough for him. He fails to see what is very plain, that not only for his own, his family's and his neighbor's good, but for the good of the city in the distance, is it necessary for him to adopt modern methods of safeguarding health. The typhoid epidemics are usually traced to water or milk contamination, and often the whole cause is through some primitive methods of the farmer or rural dairy delivery. The rural resident is only slowly learning the lesson that he is not really justified in holding such an independent position as he has in the past. He no longer must be allowed to say that the stream that runs through his property is his and he will contaminate it as he sees fit; that his cows are his and he will handle them as he sees fit. The farmer must be taught that he is a part of our health-preserving machinery and that we cannot ever have ideal health conditions until he adopts modern health principles. I will briefly refer to some of these. I will not attempt to cover the subject in any complete way, and will therefore not refer to personal hygiene of the rural resident (baths, air supply in his residences, food preparation), each of which might be made into an instructive and interesting paper, but will but touch on some of the more important subjects.

*Water Supply.*—The water of the city has been much slandered at times, and on the contrary the water of the rural districts has often received some undeserved praise. It is still common to hear a well spoken of as splendid water because it is so "cold and clear." That coldness and clearness are no assurance of cleanliness is what the rural resident must be taught. As a writer on this subject has said: "A spring, like many other things in this world, is just as good as its surroundings." If it happens to be situated on an uninhabited and uncultivated upland, it will likely yield pure water. Since springs are only overflows of the ground water, their condition is dependent on the geological condition of the strata through which this flows, etc. Hence we see that if the rock be of such a character that minerals may

be dissolved by the water passing through it (limestone, sulphur, etc.) the water will take up these impurities, which may or may not be harmful, and if the strata of rock be upturned and broken there may be a seepage of pollution from the surface of the ground directly into the spring's source (sewage, drainage from canning factories, etc., etc.), rendering the water, which still may be clear and cold, quite dangerous for human consumption. It can thus be readily seen that spring water and its source and course is a very large subject and involves questions such as geological formation, watersheds, location of barns and outhouses in relation to the water supply. Given a spring water which arises from a depth of 20 feet or deeper, and which does not become contaminated from the time it leaves the bed rock till it is taken for use, it will probably be found good water. The writer was directed on one occasion in an investigation into a rural water supply to a flowing well heralded for miles around as being the best of water. It was clear, it was cold, but it contained sewage, and the reason for it was easy to find, as the pipe leading from the bed rock to the trough above was loosely connected and the surrounding ground was saturated with barnyard excreta. The owner of the well was proud of his spring water and was more than disgusted to hear that it was not pure water. On the question of the water supply of a family does so much depend. A contaminated well has been the means of spreading typhoid fever on many occasions. Many a farmer has lost the lives of his dear ones because he did not know that the water he was giving them to drink contained the means of their destruction. On many occasions farmers and dairymen have washed their hands and their milk cans with water supposed to be clean, but which was contaminated, and this impure water was the means of conveying death to many for many miles around. Not only typhoid fever but other intestinal diseases are spread by impure water. The farmer and rural resident must be inspired with the truth that the water which he and his family drink and the water he gives his animals to drink must be pure.

So we would say that a well or a spring or river water or any water that is used for drinking and washing should be tested by a competent bacteriologist and, if pronounced impure, the water should be abandoned or the source of the impurity hunted out and eradicated. This last can usually be accomplished. My experience is that it is unusual to find

a properly constructed well in the country. In the first place it is usually located near the barn or outhouse, and this is wrong to begin with. Wells should be as far as possible from the house, the barn, or the privy. If possible, the ground around it should be higher than the surroundings, so as to prevent surface washings running into it. Space does not allow a detailed description of an ideal well, but it is sufficient to say that it should be so constructed that it is impossible for soakage to get into it and impossible for foreign material to contaminate it. The same statement applies to springs and cisterns.

*Disposal of Refuse.*—Next to water this is the most important hygienic subject about which to teach the farmer to-day. I do not think I exaggerate when I say that nine farms out of ten through my native province, Ontario, are grossly neglectful in the question of disposal of refuse, whether it be human excreta, manure, or drainage from barns or hog pens. The old-fashioned privy—an abomination of filth—is largely in evidence. The rural resident must be taught that such an unclean thing must no longer be endured. Why? Because it is filthy, because it breeds flies, which are filthier. It is easy to resort to a substitute, and even if it be nothing better than an outside dry earth closet, this with proper attention will not be accessible to, nor will it attract that great enemy of the race, the fly. Many substitutes might be suggested, such as the well-known syphon system, about which the farmer can easily find out from the health authorities of his district.

In the disposal of barnyard manure the average farmer has always seemed to me most short-sighted and slovenly. What do we find the average farmer doing? Piling the manure up mountains high around his stable door, and each time he enters or leaves his stable he is compelled to wade through it. Moreover, the drainage from the barn and outhouses is run into or near this manure pile. The result is an eternal mess of filth around his barn, with the ground usually soaked with barnyard soakage for many yards around, usually running eventually into the well or cistern. Now would it not be more sensible to have no manure deposited about the barn door? The excuse the farmer usually gives is that the piles freeze in winter and then the manure cannot be hauled away and it takes a long time in the spring for the frost to come out. But this is a poor excuse. It is perfectly easy for a farmer to have a covered pit for manure

one, two or three hundred feet from his barn and to take the manure to this pit daily or weekly. In this way he saves the waste resulting from constant moisture on it and stops the existence about his barns of a filthy, soggy mess which breeds disease to himself, to his family and to his stock. It would be very easy to go farther and tell the farmer how to drain his barn in an economical way, how to arrange his horse stalls and cow stables so that his stock is more comfortable and yet the conditions of his barn more sanitary. But if we can correct the bigger evils of privy vaults and manure piles, a great deal will have been accomplished.

*Cow's Milk.*—One of the big questions in modern hygiene is how to get cow's milk from healthy cows and how to get through the more or less circuitous route from the cow's teat to the baby's bottle without contamination and with continued refrigeration. The problem has been taken up by many health boards and many milk commissions, and I want to repeat what I said before, that in order to succeed entirely in this matter we must get the farmer to understand that he is part of our great health machinery, and especially on this pure milk question that it is necessary to have his earnest co-operation.

It is not necessary here to emphasize the subject of need for reform on this milk question. There is not a city or small town in Canada that does not feel that need for reform is urgent and imperative and the cry of the poor little bottled babies is heard throughout the land, and intelligent people have been of late aroused to action on this subject. One of the points, in this question (it is just one of the links in the chain of correct handling of milk) is to teach the farmer the two subjects to which I have already referred, that the water and the cleanliness regarding refuse are important, because if the farmer have not clean water to wash his can and to give to his cattle to drink, and has not clean cow stables and barnyards, it goes without saying that he cannot have clean milk. But given these, what more must we have in order to have the farmer able to hand to the city dairyman milk which is clean and properly refrigerated?

Space does not allow me to more than touch the points that must be carefully watched if the farmer is to accomplish these objects. First, the cattle—this is not the place to discuss tuberculin-tested cattle, but suffice it to say that a competent veterinarian should inspect every cow supplying



milk, at frequent intervals; that all diseased animals should be quarantined and their milk confiscated until they can be certified healthy again.

*The Cow Stables.*—These should be properly constructed, paying special regard to free and complete drainage of all discharges, and the flooring so laid that the cattle cannot foul themselves. The cow stables should be light and airy, cool in summer and warm and light in winter. The cattle should be kept clean by frequent currying, and their udders should be thoroughly washed before milking. The milker should have clothes that are clean and hands thoroughly washed and the pails to deposit milk must be scalded and absolutely clean—the milk when received should not be allowed to stand in the cow stable or anywhere, but immediately taken to a clean, dustproof milkhouse and kept at a temperature not above 50 degrees Fah. by means of ice that is known to be clean. The water that the cans are washed in should be of certified purity. By such procedures farmers can get more money for their milk and more milk from their cows than by the present antiquated methods which are generally the rule throughout our Canadian farms. These are only a few of the points in reform in handling of milk, but they are all essential, and the time is not far distant when, if the farmers refuse to adopt these simple rules, Boards of Health will step in and force upon them the reforms which are imperative if we are ever to make a standard of pure milk. How much better it would be for the farmer to recognize the need of reform and intelligently do his part in the prevention of disease.

I have thus briefly noted some of the more important reforms in rural hygiene—not, I hope, in a spirit of unreasoning criticism, but with the idea of bringing about what should be the aim of all good citizens, i.e., the greatest good to the greatest number.

## *Some Recent Developments in the Study of Dental Caries.*

BY WILLIAM J. GIES.

**I**T is always a pleasure to appear before your learned body to report the results of our work during the period that has intervened since our last previous communication. By way of introduction to the paper by Dr. Lothrop this evening, I wish to bring to your attention, briefly, some recent observations relating to the cause and prevention of dental caries. Many workers in all parts of the world have been giving serious and earnest attention to the subject of dental caries. It would be impossible, in a short address, to do justice to the achievements and conclusions of the many who have lately reported results. I shall restrict my remarks, on this account, to a discussion of one of the most important and far-reaching of the recent studies of dental caries. I refer to the book of Dr. H. P. Pickerill, on "The Prevention of Dental Caries and Oral Sepsis," issued in London a few months ago (1912), and constituting the "Cartwright Prize Essay of the Royal College of Surgeons of England for 1906-10, With Some Additions."

The preface of Pickerill's book, written at the University of Otago, New Zealand, in November, 1911, contains the following statement: "When this work was commenced nearly six years ago, a 'plan of campaign' was drawn up to which it was decided to adhere and to continue the work until the whole field had been covered, or at least investigated to some extent. It was further decided to publish nothing until the chain of evidence was more or less complete." This statement explains why the many results in Pickerill's book were not made public, from time to time, as the data were obtained. Pickerill evidently sought to make the work very complete before he published any of the results in any section of his plan. I have brought the book with me and take pleasure in presenting it for your inspection this evening, as I proceed to discuss some of its features.

You will observe, as you examine Pickerill's book, that he treats thoroughly, comprehensively and concisely, both the causes of dental caries and means for its prevention. The following statements are broadly significant (pp. 23-24):—

“We therefore come to the conclusion (1) that *bacterial plaques* upon the teeth *are not an essential factor* in the causation of caries; (2) that the lodgement and infection of carbohydrate material is the essential factor, and that those circumstances which favor the formation of bacterial plaques upon the teeth also favor the lodgement of carbohydrates, and so the occurrence of the two usually coincides.

“Therefore it is evident that the two essential attacking forces in this disease are (1) the acid-forming organisms of the mouth, (2) the presence of fermentable carbohydrates—the first *active*, the second *passive*.

“The inception and progress of the disease are, however, by no means so simple as would appear from the above statements. The phenomena are profoundly modified by a large variety of factors, such as the character and number of *organisms* present, the *variety and amount of carbohydrate* material available for acid production, the amount, alkalinity, and diastatic action of the *saliva*, the resistance of the *enamel surface*, the shape and development of the jaws and the disposition of the teeth. And since these conditions vary in different individuals, it is evident that the possible permutations and combinations of the various factors are very numerous and complex. *It is not the ‘effect’ of any single ‘cause,’ but it is the resultant of several forces—it may be few or many, and not always similar—acting in one general direction, and which happen for a longer or shorter period to be coincident.*”

Pickerill's detailed and elaborate contributions to the knowledge of the structure, character and resistance of enamel seem to deserve your very special attention.

On a subject which has lately received extended notice in American dental literature—the possible prophylactic power of salivary sulfoeyanate against dental caries—Pickerill writes as follows (p. 176):—“I have not made many observations in this direction; but such as they are they do not entirely accord with the findings of Michel, Low, and Beach; but the numbers are too small to make any deductions.” Then, as if the tendency to draw conclusions could not be resisted, Pickerill proceeds to say, in the face of his

own contradictory data (p. 177):—"On the whole, we may conclude that whilst undoubtedly sulfoeyanate of potassium<sup>1</sup> is a beneficial element in saliva, and one making for freedom from disease, yet it cannot be regarded as the most important or only factor in producing a natural immunity to dental caries or oral sepsis."

Digressing for a moment, let me say that Michel, who claims to have been the first to suggest sulfoeyanate prophylaxis against dental caries, who complains that his European colleagues have declined to take seriously his proposals on this subject, at the Munich congress in 1902 (and since), but who notes with pleasure the development of the sulfoeyanate propaganda among American dentists, has recently suggested that the prophylactic value of sulfoeyanate is due to its *oral* decomposition into prussic (hydrocyanic) acid with consequent "extraordinary" local bacterial action<sup>2</sup>! Michel says nothing about any other effect of prussic acid in the mouth or body. This opinion of the leader in the sulfoeyanate crusade is a stunning conception, in view of the prevailing American belief that sulfoeyanate, in some way or other, restrains the carious activity of oral bacteria without injuring, though perhaps by "stimulating," the organisms! I fancy the *psychical* effects of salivary sulfoeyanate are more important than its dental relationships—it certainly puts *words* in the mouths of many, whether it helps to keep teeth there or not.

Pickerill concludes his chapter on saliva with the following deductions (pp. 194-195):—

"1. It is evident that the saliva is a fluid extremely variable in its composition and amount, but that these variations do not occur without reason, but rather in obedience to fixed and definite laws and in response to certain ascertainable stimuli.

"2. The mechanism controlling salivary secretion is extremely sensitive and complex, since different 'flavors' of little intensity are capable of being 'selected,' and give rise to secretions of saliva differing widely in character and amount.

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1. No one has shown that sulfoeyanate of potassium actually occurs in saliva.

2. Michel: *Ergebnisse der gesamten Zahnheilkunde*, 1910, i, p. 436.



"3. That practically all the normal constituents of saliva are, if present in sufficient amount, of value and importance in protecting the teeth against the occurrence of dental caries, and in maintaining the health of the oral mucous membrane.

"4. That *acids*, and particularly the 'natural' organic acids, are the stimulants which excite the greatest amount of these protective substances per minute, and, moreover, give rise immediately, and for a considerable time afterwards, to an increased *alkalinity* of the mouth. That, conversely, substances of little or no distinctive 'flavor,' and also alkalies, produce a diminution in the amount of protective substances per minute, and reduce the alkalinity of the mouth both at once and for some time afterwards."

The latter conclusion presents the key to the system of prophylaxis to which Pickerill devotes the concluding chapters of his book. I shall return to it later in this discussion.

Several months after your President, Dr. Howe, invited me, in 1909, to take a practical interest in the subject of dental caries, I had the pleasure of meeting the members of your Research Committee at an informal session. Although I frankly stated that I knew too little about the subject to speak learnedly regarding any phase of it, I presented several ideas regarding possibilities and plans. I suggested (1) that dental caries might be due to the action of microorganisms upon carbohydrates on and between the teeth, *localized* in both cases by "adhesive mucin masses," or by other mechanical fixations.<sup>3</sup> I also expressed the belief (2) that the disintegration of "adhesive mucin masses," or their prevention, might be an important feature of prophylactic treatment against dental caries; (3) that both disintegration and prevention might be accomplished satisfactorily with dilute acid; and (4) that "food acids" (the typical fruit acids and their acid salts) might be effectively used for such purposes.<sup>4</sup>

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3. The suggestion regarding microorganisms was a mere statement of the prevailing physiological opinion, but I imagined the idea about *local* fixation of microorganisms and carbohydrate by "adhesive mucin masses" was new. I soon learned that Dr. Kirk has previously emphasized the same conception.

4. These views were based on many years of experience in the work of precipitating mucins and mucoids, on the general physiological knowledge that salivary secretion is stimulated by fruit juices, and in the opinion that acid fruit juices could do no damage to enamel during their *transient* appearance in the mouth.

My direct proposal to Dr. Howe, prior to the committee meeting to which I refer and the plan on which we had been proceeding, was a preliminary study intended to reveal, if possible, any existent relation between the composition of the saliva and the teeth of people in dental health and disease. The following statement was incorporated in the first report of our work on that general subject<sup>5</sup>: "Mucin occurs in saliva, and apparently also on dental surfaces, primarily as acid-salts in concentrated colloidal solution. When viscid mucinous coatings are treated with basic material, such as carbonate of an alkali or an earthy element, the mucin mass becomes superficially more smeary and slippery by reason of the production of more soluble mucin salts *at the surface*. Complete mechanical removal of a mucin plaque from a tooth is facilitated by the addition of a *basic* material that renders the mucin superficially more viscous, but the slippery surface thus produced may make the application of considerable friction necessary for the detachment of the plaque. On the other hand, when a viscid, mucinous deposit is treated with *acidic* material, the mucin mass is completely disintegrated by a curdling or agglutinous process, the particles are devoid of adhesiveness to smooth surfaces, stickiness disappears because of the precipitation of caseous mucin itself, and the entire disorganized mass may be readily flushed away.

"The foregoing facts are responsible for our suggestion to Dr. Howe that *diluted* vinegar or common fruit juices—*acid media ordinarily present in food*—may be very helpful agents in the removal of mucinous masses from teeth, especially if applied directly with a suitable instrument. It is probable that the cleansing effect of such treatment would be less harmful to the teeth than the frictional operations now in use for similar purposes. That this suggestion is not as radical as it may appear to be is obvious from the fact that the effects of occasional *well directed* treatments of the teeth with *food acid* could not be more deleterious than the influence of the same materials in the mouth, and on the teeth, when ingested with food."

About a year later Dr. Howe, in a notable address on "The degree of prevention of decay of teeth obtainable by oral hygiene" made the following allusion to the proposed

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5. Lothrop and Gies: *Journal of Allied Societies*, 1910, v, p. 284.

"food acid" treatment:<sup>7</sup> "The suggestion of Prof. Wm. J. Gies, of the Department of Biological Chemistry of Columbia University, that the teeth be washed and brushed with a solution of a vegetable acid, such as diluted vinegar, has had a few favorable reports in cases of great susceptibility to decay and marked inability of patients to keep their own teeth clean, but a sufficient number of trials extending over enough time, have not yet been reported by dentists to give assurance of its results. The reason given by Prof. Gies for the suggestions was that acids are capable of coagulating and breaking up mucin from its adhesions, and that the degree of acidity required would be so slight that no harm to the teeth's structure could result. This would be a radical departure from former ideas, based apparently on the supposition that dental disintegration is the result of the action of acid diffused through the mouth, and that this should be neutralized by alkaline lotions; whereas the worst cases of susceptibility to decay have been found when mouth fluids were markedly alkaline to litmus."

Last February Dr. Howe added this statement to the above:<sup>7</sup> "I have several patients who have cleaned their teeth with a solution of vinegar for six months and more, and I have never seen their teeth kept so clean or found them so free from decay."

"I am not aware of any systematic effort or purpose among dentists to test the simple suggestion I had the privilege of making more than three years ago, which was published two years ago, and which Dr. Howe mentions favorably in the foregoing quotations. As Dr. Howe says in the remarks that are quoted above, the proposed use of "a solution of a *vegetable acid*" (e.g., *diluted* vinegar, fruit juices with their acids and acid salts, vegetable extracts, etc.) "would be a radical departure from former ideas." It appears that the suggestion has been disregarded because of a lack of confidence in it, due primarily, I presume, to traditional fear of "acid."

Pickerill states conclusions which not only support the proposed use of fruit and vegetable juices, etc., as dentifrices, but which also indicate a larger usefulness of such "natural acids" as essential elements in a *prophylactic diet*. Let me quote a few of his statements on this broad view of the utility of "food acids" and acid dietaries in the contest against dental caries:

“In order to prevent the retention of fermentable carbohydrates on and between the teeth, and so eliminate or very considerably reduce the carbohydrate factor in the production of caries, *starches and sugars should on no account ever be eaten alone, but should in all cases either be combined with a substance having a distinctly acid taste, or they should be followed by such substances as have been shown to have an ‘alkaline potential’; and the best of these are, undoubtedly the natural organic acids found in fruits and vegetables*” (Page 215).

“We are, therefore, driven to the inevitable conclusion that *alkaline dentifrices and mouth-washes for the prevention of dental caries must be abandoned*, and we further conclude that some substance which is a salivary stimulant should be used in order to promote and educate the activity of the salivary glands. Now, it has been also conclusively proved that the best substances for this purpose are *acids*, and there is not the slightest reason why the best should not be used in this case” (Page 226).

“The objection will probably be at once raised that acids are ‘bad for the teeth,’ in that they can be shown to decalcify them; this is one of the fallacies of experiments conducted entirely *in vitro*. It has been shown that comparatively weak acids are the best salivary stimulants, even though they should cause some superficial decalcification, which it will be shown they would not; but even if they did, and at the same time prevented caries from occurring, it would be *infinitely the lesser of the two evils*. The evil would be manifested probably as erosion, attrition, and abrasion; but these would be slow in progress, infinitely less in prevalence; and, moreover, the children would escape, which is the very gist of the problem with which we are dealing. But would acids cause any decalcification when used in this way? We have already seen that five and fifteen minutes after their use the alkalinity index of the mouth is always considerably increased above normal, and that in the case of as strong an acid as citric in the lemon, two minutes after its use, and including small fragments of lemon, the saliva was intensely alkaline. This may be readily tested roughly by anyone with a piece of litmus paper placed in the mouth or against the teeth half a minute after eating or washing the mouth out with anything weakly acid. Undoubtedly there is a short time during which the acid re-



mains unneutralized, but this is not sufficient to cause any effect, except, perhaps, on the occlusal surfaces in the case of masticating acid substances which are actively pressed and ground between these surfaces" (Pages 226-7).

"From a very large number of observations, I am convinced that no harm will accrue to the teeth from the use of those acids, in such strengths as they are active salivary stimulants. An acid substance which it is suggested should be used in a general manner for this purpose is *acid potassium tartrate*. This substance has several advantages:

"1. It is an active salivary stimulant.

"2. It is a form of acid which is widely distributed in nature, and one, therefore, to which the salivary glands have by the process of evolution been adapted.

"3. Its solubility is only 1 in 200 of water, and, therefore, if it be used in the liquid form there can be no danger of its being used in too strong a solution, either on account of faulty making-up or of subsequent evaporation.

"4. It has an agreeable taste, which may be made more so by the addition of saccharine. This is, again, an extremely important factor in applying these principles to children" (Page 227).

"Of course *other acids or acid salts* may possibly be used in a similar manner. There are, however, *two dangers* to be guarded against—those of using an acid either *too weak* or too strong. If an acid be used in too weak a solution, it will certainly do much more harm than good, for it will reduce the alkalinity of the mouth without exciting any increased flow of saliva, and thus for some time the reaction of the mouth may be actually acid; or the weak acid, by being unneutralized too long, may in a stagnating cavity attack the enamel of the teeth itself. This is evidently why the lactic acid of fermentation is not neutralized—it is formed in such small quantities that the gustatory nerves are not stimulated. If an acid be used in too strong solution, it may have a precisely similar effect: the stimulus to the gustatory nerves will be too great; it will have a paralyzing effect, and the flow of saliva be consequently diminished, giving the opportunity to the stronger acid to directly attack the teeth" (Page 232).

"Acid mouth-washes will also, I think, prove to be beneficial in reducing the number of acid-forming organisms in

the mouth; for, as is well known, those organisms which form acid are very sensitive to the action of acids.<sup>8</sup> Moreover, all organisms are very sensitive to sudden changes in the composition and specific gravity of the media in which they are growing, and such changes are brought about in the saliva by the action of weak organic acids" (Page 232).

"The use of such mouth-washes will also tend to keep the calcium phosphate and carbonate in solution, instead of their being precipitated upon the teeth in the form of calculus, which, as is well known, sooner or later leads to a serious condition of *oral sepsis*. On the other hand, the use of chalk dentifrices frequently promotes the formation of calculus by particles remaining against the teeth and acting as a focus for precipitation of lime salts from the saliva" (Pages 232-3).

"The diet of all 'natural' races and of those *relatively immune* to caries . . . is characterized by *variety* and *sapidity*. . . . Further, it will have been noticed that, although a variety of sapid substances are used, yet the ones most frequently recurring are *acid in reaction, chiefly fruits and berries*; and, as has been previously shown, these are the very stimulants which produce the most profuse and the most alkaline flow of saliva, and to this latter I think we are justified in ascribing the relative immunity found in the races which have been considered" (Pages 264-5).

"We may, therefore, conclude that the dietary of civilized communities at the present time errs seriously in the direction of being too soft, of having too high an acid potential, of being not sufficiently stimulating to the salivary glands and not sufficiently detergent" (Page 276).

"In considering how such a dietary may be corrected, social and economic conditions have to be borne in mind; it is neither possible nor desirable that any sudden or drastic change should be made. Conditions must be accepted as they are found, and an attempt made to improve them. It is impossible, for instance, under modern conditions, to ban absolutely all soft and fermentable carbohydrates. Improvement in this direction may come in time, but it will be essentially a slow and gradual process, depending upon the rapidity with which people are educated to demand such an alteration. Sufficient has, however, been said to show how the majority of food substances of high acid potential may be rendered practically innocuous" (Page 276).

“It has been shown that by the combination of strong salivary stimulants with such substances, either in a mixture or, much better, in sequence, the acid production may be reduced to a minimum or entirely negatived. What is therefore to be advocated is that *all meals should contain a fair proportion of salivary excitants, and, more important still, should both commence and end with some article of diet having an acid reaction.* This does not of necessity imply a ‘vegetarian’ diet; in fact, many ‘vegetarian’ meals are distinctly conducive to caries on account of their soft, pappy, and adhesive nature” (Page 276).

“Taken in such a manner, the total amount of fruit and vegetable need not be large, and in no case should such a dietary be commenced suddenly; it should, especially in those who have been unaccustomed to the inclusion of fruit and salad in their dietary, be worked up to gradually, commencing with one meal a day; then, after a week or so, two meals may be terminated with ‘acids,’ and finally the principle may be extended to all meals. Should any intestinal irritation be set up, the inclusion of boiled milk in the dietary will correct it; this I have found to be but very occasionally necessary, and only in the initial stages. The much-dreaded bugbear ‘diarrhea’ is much more likely to be caused by eating fruit in an unclean condition than to be due to the mechanical or chemical action of the fruit on the bowels. All fruit, therefore, especially that of unknown source, should be well washed or have the skin removed before being eaten. The only effect of fruit taken regularly and in such moderate quantities is to insure a full and regular action of the bowels” (Page 278).

Much that is said in the foregoing quotations is based on the well-known stimulating power of weakly acid media to excite salivary secretion. Much that Pickerill has stated reiterates what I have said here, speaking under your auspices, on former occasions formally and informally. Much that Pickerill proposes, as formulated in these quotations, is new, but very suggestive and probably highly important. I earnestly suggest that dentists open their minds to possibilities of the proposed “food acid” prophylaxis (if prejudice or tradition has closed them), and that effective clinical tests of the value of the proposed measures be instituted in as many quarters and by as many dentists as possible.

At your meeting last February<sup>9</sup> I made the following

statement in this connection: "Let me digress for a minute, again to urge attention to my suggestion, as stated two years ago, that dilute solutions of various natural organic acids (*e.g.*, *diluted* vinegar and diluted fruit juices), may be useful agents for cleansing the teeth, *both by their disorganizing effect on mucin plaques and by their stimulating influence on salivary flow, with consequent natural flushing of the oral and dental surfaces.* The current general employment of alkaline or basic dentifrices does not appear to me to be wholly warranted. I know this suggestion is a radical one, but all I propose is that the matter be given a trial. *My suggestion can be tested in the conviction that harm will not result to any one before the value of the treatment is ascertained.* The suggestion can be definitely and emphatically rejected if the deductions on which it depends are unfounded."

Pickerill's proposed use of acid potassium tartrate will be recalled by some of those present at former meetings as included in my informal suggestions to a few of your members who have suggested privately that diluted vinegar or juices of grapes, lemons, oranges, apples, and other fruits might be too "irritating" or "destructive." I have also suggested to some members of your society that *carbonated water*, or certain types of dry, *acid-protein products*, or a dilute *acid* solution of di-sodium hydrogen phosphate and di-hydrogen sodium phosphate, with the latter predominant, might be as useful as any of the fruit juices, or the acid or acid salts obtainable from them. Even boric acid should be tried. I believe that many such physiological possibilities should be tested, and I hope to be able to report, next year, the results of studies with a number of them. But the main tests of these possibilities must be made and reported by dentists themselves.

It is interesting to observe that Dr. Pickerill is apparently unaware of the reports of your proceedings during the last three years. I have been wondering why no mention is made by him of some of the proposals which have antedated his. Certainly not from any cheap desire to ignore the facts of dental history. His book shows him to be too big a man for that. I don't believe he ever heard of our work. His own studies have been conducted in far off New Zealand. Our reports to you have been published in your



*Journal of the Allied Societies.* What in the name of dentistry are those allied societies? Are they a brewers' confederation or allied trades organizations? Are the "Allied Societies" a combination of social workers or amalgamated singing societies? What sort of an alliance does "the journal" represent? I fancy most of your foreign colleagues in dentistry are wholly unaware of your proceedings, and unless your journal has been brought directly to their attention, know nothing about it. "What's in a name!" In this case nothing—most emphatically and politely, nothing! Why not raise the banner of dentistry and put dental into the title of the "*Journal of the Allied Societies*?" You could then consider Pickerill, in the language of the "funny men" in our newspapers, as the man who put the dent in a fortunate dental incident.

In several of our discussions I have emphasized my belief that alkaline dentifrices lack the prophylactic power attributed to them as solvents of mucin and mucin plaques. I have also called attention to the fact that the alkalinity of dentifrices either favors or does not interfere with the growth of many bacteria and also inhibits the activity of the salivary glands, without neutralizing the fermentation acid that is cumulately produced on, and which combines with basic matter in, the enamel and dentin at the points where caries originates and proceeds. Fruit juice not only disintegrates the mucin collections, but also injures most oral bacteria, thus reducing tendencies to carbohydrate fixation (particulate and molecular) and diminishing fermentation, to say nothing of the flushing effect of the increased flow of saliva which Pickerill emphasizes and which accentuates the conditions I have mentioned.

The propaganda in favor of alkaline dentifrices is maintained by those who sell the goods—physiologists are not responsible for it. Dentists should no longer assist in maintaining the widespread delusion that "*antiseptic*" dentifrices destroy all oral micro-organisms present at each application, and, in this way, prevent dental caries.

I have quoted Pickerill at some length. I have emphasized his prophylactic views. They accord with much that I myself, in your service, have urged you, from time to time, to consider. Pickerill may be mistaken, I may be wrong, but the harmony in the opinions we have derived

independently, and the great mass of evidence Pickerill has accumulated during the six years of work which he conducted, suggest, if you have any confidence in our conclusions, that you give earnest attention to the possibilities I have mentioned, and that as scientists and clinicians you determine their value.

At the conclusion of the address, Dr. Lotfhrop and the speaker demonstrated (1) the qualities of salivary glands from oxen and aqueous extracts of such glands, (2) the precipitation and nature of mucin from such extracts, (3) the properties of dry preparations of pure mucin, and pure sodium and potassium salts from human saliva and bovine salivary glands, (4) the ready precipitation, by fruit juices, of mucin from aqueous solutions of its salts, and (5) the precipitation of mucin from bacterial cultures (containing mucin salts) by the acid produced by the bacteria. —*Journal of Allied Societies*.

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6. Howe: *Journal of Allied Societies*, 1911, vi, p. 236.

7. Howe: *Journal of Allied Societies*, 1912, vii, p. 277.

8. Oppenheimer: "Ferments and Their Action," p. 237; Cohn: *Zeitschrift f. physiol. chemie*, 1890, xiv, p. 75.

9. Gies: *Journal of Allied Societies*, 1912, vii, p. 277.

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## ***Court of Appeals of the District of Columbia renders Judgment in Taggart Case***

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**(I)**N February 25, 1913, the test case of Dr. W. H. Taggart against Dr. Geo. W. Boynton was decided by the Court of Appeals. The suit was for the infringement of a patent for making moulds for dental inlays and the like, and was consequently of the greatest importance to the entire dental profession. It was held, upon review of the evidence, that it was shown beyond a reasonable doubt that for many years prior to the original application the process described in the claims of the patent had been publicly practised on many occasions and that such prior public use avoided the patent.

An examination of the claims of Dr. Taggart discloses that they do not cover, nor purport to cover, a new process for filling teeth. On the contrary, they related solely to the process of making patterns out of plastic material or wax, and the process of forming a mould about such pattern, from which a duplicate of the pattern may be produced. The words "dental inlays and the like," as used in the claims of the patent, when read in connection with the specification, as they must be read, clearly embrace "bridge-work and the like." Undoubtedly the patent would have even broader signification, as the specification specifically includes "certain other types of work of fine grade."

*The Washington Law Reporter*, in reporting the judgment, gives a full review of the case, which is but briefly outlined in the following synopsis:

The art of producing metal castings by means of a mould formed of a wax pattern was shown to be very old. This art was practised by the ancient Greeks and Romans and was extensively used in the middle ages for producing statuary and other accurate castings. The process is known as the "Cire Perdue" or "Lost Wax" process. It is conceded that Cellini used this process hundreds of years ago in casting one of his most celebrated statues. The burnished inlay process was also well known for many years prior to the application for a patent. The patent to Hol-

lingsworth in 1902 covers machines for casting dental bridges. The wax pattern in the Hollingsworth process is treated substantially in the same manner as disclosed by the Taggart patent. The patent to Reese in 1878 covers a mould for casting dental plates. Thus it was shown that the process was old long prior to the Taggart patent.

Dr. O. H. Simpson, of Dodge City, Kansas, testified that in 1898 he had performed an operation for the restoration of the tip of a tooth in substantially the same manner as that disclosed in the patent in suit. The original apparatus and the original piece of work was introduced as evidence.

Dr. J. O. Ball, of Mount Pleasant, Iowa, testified concerning cast inlays he had inserted between the years 1895 and 1903.

Dr. V. H. Hobson, of Richmond, Kentucky; Dr. William E. Harper, Chicago; Dr. M. W. Hollingsworth, and Dr. J. G. Schottler, of Milwaukee, each gave evidence of having made dental castings by the process in issue as early as 1893.

Dr. George B. Martin, of Frankfort, Ind., who was a teacher in the Indianapolis Post Graduate School, gave evidence of having practised the process here involved and the disclosure of the process to his students as early as 1890.

The judgment continues:

"Has the defence of prior use been made out? As no two cases are exactly alike, it is apparent that the character of the invention involved, the prior art, and the particular circumstances surrounding each case must be considered in weighing evidence of prior use. The contention in this case, that Dr. Taggart's discovery was revolutionary in character, is not sustained. On the contrary, as appears from the record art at the time Dr. Taggart applied for his patent, dental castings produced by the lost wax process were well known. Having this in mind, there is nothing improbable about the testimony of appellant's witnesses. Indeed, Dr. Taggart himself, according to his own testimony, was in full possession of the idea involved in these claims more than ten years before he applied for his patent. The thing that most troubled him, and that deferred his patent application, was the production of a machine by which the gold could be quickly and easily forced into the mould after its completion. In other words, the process of producing such patterns and moulds, generally speaking, was already well known. The real difficulty, therefore, was in producing a device that would quicken the practise of the



process and thus induce the profession generally to make use of it. This is apparent from an examination of Dr. Taggart's bill in this case, wherein he states: 'Your orator has expended large sums of money preparing for the market machines and apparatus with which the method of said patent can most readily and perfectly be practised, and is now prepared to supply the demand for such machines and apparatus.' The Doctor's testimony also shows, we think, that it was the production of these machines that consumed time, and not the evolution of the process.

"The real question which we are called upon to determine from the evidence before us is whether the various dentists who have testified, or any of them, were in possession more than two years prior to the date of the original application for this patent of the idea attempted to be covered thereby, and whether they, or any of them, gave expression of that idea in a practical and public way. It is of no possible consequence that by the use of Dr. Taggart's machine gold inlays and the like may be produced more cheaply and rapidly than they were produced by dentists who have testified. It is enough if those dentists took a wax impression in the manner described by these claims, and formed a mould around the pattern thus obtained for the purpose of casting a dental inlay or the like. To hold that this was not done would be arbitrarily to disregard and set at naught the testimony of witnesses whose character and reputation are unimpeached, and whose testimony is reasonable and in entire harmony with the circumstances of this case. We are unwilling to assume such a position. We are fully persuaded that the evidence shows beyond a reasonable doubt that for many years prior to the filing of the original application herein the process of making patterns and moulds for dental inlays and the like, as expressed in these claims, had been publicly practised upon many occasions. This finding avoids the patent and renders it unnecessary to determine whether the claims thereof were anticipated by the prior record art.

"It follows that the decree must be reversed, with costs, and the cause remanded with directions to dismiss the bill."

## *The Need for Dentists and the Canadian Dental Colleges.*

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**S**INCE launching a campaign for more dentists in Canada ORAL HEALTH has received nothing but approbation and encouragement from all who have given careful consideration to present conditions. Conviction has grown into certainty that the dental profession cannot maintain present standards nor can it adequately serve the public unless the ranks of the dental undergraduate be largely increased in number.

We need young men with the required preliminary educational attainment who, upon graduation, will take their places among the regular dental practitioners. We also need the clear, well-trained mind of the more scientific student inclined toward research work, who will assist in the solution of the problem of prevention as applied to caries and other dental diseases. The profession is ready to-day to financially support suitable men who will devote their entire energies to research and experimental work.

The dental profession has sometimes felt aggrieved that many medical practitioners fail to recognize the importance of mouth conditions and that dental science is practically excluded from medical college curricula. These considerations, however, should not obscure the absolute need for the dentist to be more familiar with medical science. The dentist and the physician will be called upon more and more to work together in the treatment of ill-health.

It is the duty of the dental profession to secure the highest possible type of undergraduate, give him the best scientific training a four-year dental course will permit, and graduate him well equipped for service and with a love and inspiration for further study and research. There is no dearth of young men who, measured even by the highest standards, are qualified to enter the profession of dentistry.

It is the bounden duty of every Canadian dentist to present to prospective students the claims of the dental profession and to direct the attention of all such to the Canadian dental colleges.

Canadians have reason to be proud of their dental colleges and should give them their most loyal support. There are no better dental colleges on the continent to-day and none that are maintaining higher standards. Canadian schools have maintained the four-year term and have "thrived" upon it. It would be impossible to find a Canadian dental teacher to-day who would advocate a return to the shorter school term. A similar feeling is manifest in the United States, where there is much agitation in favor of a return to the four-term course.

The Maritime Provinces are excellently served through the Dental Faculty of Dalhousie University, and if the Eastern dentists did their whole duty Dalhousie would have more dental students than she could well accommodate.

The same is true of Quebec, where two colleges are situated. Laval has a Dental Faculty teaching entirely in French, while the Medical Faculty of McGill has a Dental Department where the teaching is in English. These two colleges meet the needs of Quebec and are deserving of the best possible support of the dentists of that Province.

Ontario, too, is equipped to give the dental student a first-class professional training. Teachers who have visited all the larger dental colleges on the continent return with increased enthusiasm and admiration for the Ontario College.

The School of Dentistry of the Royal College of Dental Surgeons is presided over by Dean Willmott, who has the honor of being considered the father of Canadian dentistry. The school is owned by the dental profession and controlled by means of an elective board. Affiliation with the University of Toronto affords its students all the academic and athletic privileges of the University.

The Ontario Board occupies a dual position in that, through its appointed examiners, it not only is the official examining body, but also conducts the School of Dentistry. This arrangement renders a separate state board examination unnecessary (graduation from R. C. D. S. includes registration in Ontario) and prevents any possible friction between college and Board. Frequently teachers in dental colleges feel they are hampered and handicapped in their teaching by having to conform to the plans or methods of the State Board of Examiners, but under the Ontario arrangement the Dental Faculty has an absolutely free hand in the matter of teaching.

The four Canadian Dental Colleges are doing splendid work and are well prepared to give the students a first-class training. It remains for the members of the profession to see to it that these colleges are well supplied with the pick of Canadian young manhood, that the best in dentistry may be maintained and the profession lifted still higher in the rendering of a great service to humanity.

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### ***A Letter from Buffalo.***

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BY HABEC.

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**H**AN account of the recent and unexpected demise of DENTAL PRACTICE, "Habec" was unceremoniously thrown out of his high-salaried position as correspondent to its columns for the U. S. A. Mid-winter is a bad time to find yourself out of a job, and in this dire extremity kind Providence, impersonated by your editor, came to the rescue and restored "Habec" to the full enjoyment of a similar office in connection with ORAL HEALTH. Thus you will observe that the dental profession of Canada must continue to suffer at his hands.

But, seriously, when Dr. Reade acquainted "Habec" of the demise of *Dental Practice* he became obsessed with a sense of relief in the prospect of the feeling that another obligation was past. For the past two years he had been fruitlessly endeavoring to impress Dr. Reade with the fact that the Buffalo letter was a punk affair and nobody cared for it, but the good doctor persistently refused to see it that way. The sausage machine was therefore kept grinding until the bitter end. The letter which appeared in the February ORAL HEALTH was "Habec's" last shot fired at *Dental Practice*, but on account of the target having been moved ORAL HEALTH got the full charge of buckshot somewhere in the region of its solar plexus. However, its editor courted the trouble which he got, and you must score him for it. But "Habec" will not agree to have a spasm every month; only as the spirit moves him, and, glory be, it moves slowly.



## THE ALUMNI ASSOCIATION "GET TOGETHER."

Immediately after Abe Lincoln's birthday in February the U. B. Alumni Association, Dental Department, had their annual "glad hand" festival. The arrangement committee showed their respect for old age by letting Abe have his blow-out first, which, indeed, was very considerate of them. But when they opened their party on Friday morning, the 14th, it was readily seen that Abe's was little more than a cheap imitation of a nickel show in comparison. Nearly three hundred happy alumni swarmed the halls of the college building in Goodrich Street and shook hands with everything from the office clock to the skeletons in the museum. What wealth of association hovers round every old bench, nook or cranny only the graduate may feel after a long-delayed return to his alma mater. We all have enjoyed this experience, and each time we return the associations grow dearer and fraternal bonds grow stronger. The first essay was read by Dr. W. D. N. Moore, of Chicago, entitled "Greater Possibilities in the Construction of Crowns and Bridges by the Casting Method." Dr. Moore's remarks were thoroughly practical and plainly showed that he is a master of the art as exemplified by its development up to date. He advocates close adaptation of band and caps to minimize the amount of cement required, and it is his custom to fit a thin gold cup to the surface of the tooth to be restored and then adjust the band and build up the crown in the usual way. The inner cap is soldered to the band, thus eliminating the need for a large mass of cement, as is usually required. Cement will become impregnated with offensive gases and produces an unsanitary condition. "Habee" often uses oxy-phosphate of copper in such cases, which, owing to the peculiar qualities of this valuable material, does not cause this disagreeable condition. However, there is greater strength in close adaptation and little cement than in the reverse situation. In his discussion of the paper "Habee" spoke of good judgment as being one of the prime requisites influencing the practice of bridge work, and it is in the selection of the correct method to be used that success is gained. Bad judgment has ruined many beautiful effects and splendidly finished operations. Dr. Moore exhibited several pieces of exquisite workmanship illustrating different cases which he described. These had but recently been returned to him from Australia, where

they had been sent by request for exhibition. They soon are to be sent to Europe for a like purpose.

Dr. Abram Hoffman, Buffalo, delivered himself of some good, practical thoughts regarding "Orthodontia for the General Practitioner." The discussion was quite spirited and brought out much that was interesting.

The "fete de frolic" was pulled off at the Hotel Iroquois on Friday night. This was the annual alumni dinner, and the reunion of the class of 1903 shared the honors of the evening with the newly-elected dean, Dr. D. H. Squire, who also was recently elected president of the Institute of Dental Pedagogics. Each class was seated by itself and soon the banquet hall rang with the old class yells, many of which had not been heard since the good old college days. Everybody was surcharged with college spirit and entered into the fun with much zest, so that when the toastmaster presented Dr. Squire the real sport began. When he said "Mr. President" it was "Habec's" cue to rise and demand the floor and protest that Dr. Squire was out of order. After a ten-minute harangue "Habec" sat down and Dr. Squire again said "Mr. President." The speaker for the class of 1895 butted in at this point and told of the wonders of his class, while the genial dean remained standing, with a peculiar expression upon his face. So it went from year to year until eighteen classes had been heard from, after which Dr. Squire was permitted to proceed. He who talks last has it over everyone else, and Dr. Squire exercised this prerogative, so that when he had finished enough had been said.

After such ragtime talk as the foregoing we will pass on to our next and merely add that it was a delightful evening, which was but one of the pleasant events of the best meeting the Association has had for several years.

#### THINGS ARE LOOKING UP.

The Dental Department of the University of Buffalo has taken a lurch and things are looking up. The third dean has taken the tiller, and Dr. Squire now becomes our great white hope. We believe he will prove to be the man who put the "pep" in "pepper." At any rate harmony seems to abound everywhere and all the boys are rooting for the home team. A general co-operative scheme has been evolved which, if carried out, will make the faculty and alumni act as a unit for the welfare of the institution. A

number of special lecture courses have been added to the regular curriculum, one of which is Dental History and Ethics, and is being given (pardon our modesty) by "Habec." However, it is not new to us, for we inaugurated the course several years ago and it was discontinued upon our resignation from the faculty. It embraces subjects second to none in importance, and no class should be permitted to graduate without proper instructions in dental ethics, at least. Here's hoping that the capacity of the school will be severely taxed, for we need many more dentists to do the world's work.

#### PYORRHEA THE GOAT.

Did you ever hear of a disease which has been cured by so many different remedies as pyorrhea has? What has been accomplished in the treatment of this dental bugbear is really wonderful, if we are to believe all we hear and read of these remarkable cures. These remedies cover a vast range, from Christian Science to buttermilk and from osteopathy to sathepatica. And now along comes one of our profession's scientific investigators who has derived great benefit from Pa-pay-ens digestion tablets in the treatment of pyorrhea. Ye gods! preserve us from Lydia Pinkham! If there is any condition that displays the ignorant ignorance of the foolish follies of the dental profession, pyorrhea you are it. If some of these wise guys who know nothing about it only knew enough to keep still they might fool the public by looking wise. Hasten the day when pyorrhea lights on one spot long enough to be tied to a snubbing post so we can all see what it looks like. The latest hope is Dunlop's compressed antiseptic air, which may blow some sense into us, even if it doesn't blow the pyorrhea out.

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## SOCIETY ANNOUNCEMENTS

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### *Convention Ontario Dental Society*

12 - 13 - 14 MAY, 1913.

The annual meeting of the Ontario Dental Society will be held on the 12th, 13th, and 14th of May next, in the College Building in this city. The Committee has endeavored to put on papers on practical subjects, and has been fortunate in securing men of exceptional ability to handle these subjects.

Dr. Geo. E. Hunt of Indianapolis, Editor of "Oral Hygiene", will give a paper on "The Economic Value of a Clean Mouth", and will illustrate it with motion pictures.

Dr. J. Wright Beach of Buffalo will give a paper on "Special Attachments for Partial Dentures," to be illustrated with stereoptican views.

There will also be a paper on "Mouth Indications of Syphilis" by a prominent physician. This will be accompanied by a large clinic on that subject.

A paper on "New Appliances in Dentistry" and exhibits of the various appliances will be an interesting feature.

The clinic committee promises a large clinic on subjects of practical value,—that committee makes an appeal to the dentists for clinics of every description. If you can help in any way with a clinic your assistance will be greatly appreciated. Please communicate your willingness at once to Dr. J. A. Bothwell, 604 Spadina Ave., the Chairman of the Clinic Committee.

Please note the dates, May 12th, 13th and 14th and come prepared to attend the best convention yet held.

ARTHUR DAY.

Sec'y Programme Committee

F. C. HUSBAND, Chairman.

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Mr. Bart Cross was fined in the Toronto Police Court, a few weeks ago, for illegally practising Dentistry in the city of Toronto.





This Department is Edited by C. A. KENNEDY, D.D.S.

*Helpful Practical Suggestions for publication, sent in by members of the Profession, will be greatly appreciated by this Department.*

*Address. C. A. KENNEDY, D.D.S., 2 College Street, Toronto.*

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PROPHYLAXIS IN COCAINE INJECTION. Since cocaine in the doses generally employed for hypodermic injections acts upon the vasoconstrictor system, producing pallor of the face, coldness of the extremities, elevation of the blood pressure, and finally syncope, two and one-half centigrams of extract of opium in an infusion of coffee are recommended. This prophylactic mixture, which has a vasodilator effect, should be administered thirty minutes before injection.—*E. Gruch, in Revue de Stomatologie.*

TO REMOVE GUM TISSUE FROM CAVITY.—My method of procedure in this case is to remove the greater part of decay, especially beneath the gum margin, and temporarily stop with gutta percha; at the next sitting this filling will have exposed the margin of the cavity, and it can be prepared much more easily. *F. R. McClanahan, in Dental Summary.*

CLOSURE OF CLEFT PALATE BY PRESSURE.—Shea traces this operation back to 1776, when Semoniee, a French dentist, performed it. There have been many methods introduced since then, but Shea has a new method in which he uses a bar made of gold and platinum wire, No. 18 gauge. It has threaded ends with nuts attached thereto, and by being screwed up a little each day, they close the cleft by constant and gradual pressure, all soft parts of the mouth being thoroughly protected by gutta percha.—*International Journal of Surgery.*

REMOVABLE PIN TEETH.—Removable pin teeth, especially molars and bicuspid, may occasionally be used on metal dentures in place of soldered-on teeth. They have, however, one disadvantage; they must be removed in case the denture requires to be soldered in making repairs. They may stand fire, but the risk is great. If the teeth are long they may be held with gutta percha instead of cement, and in that case are readily removed and replaced. Special care is needed to strongly solder the pins to the plate, using plenty of solder at the base of the pin, and seeing that it flows freely. They make a neat finish, have a natural feel to the tongue, require less labor and less material in construction, and are strong and cleanly. It must be borne in mind that they do not stiffen the plate as do the soldered backings of ordinary plate teeth, therefore the plate must be made stronger. Several makers present molds much more natural in shape and character than are the molds of plate teeth, and as there are now so few plate teeth used, the stock of dowel teeth is better kept up. Keeping the stock does not entail so much capital tied up in expensive platinum pins, therefore the stock is more likely to be kept well up to date and in good variety.—*W. H. Truman, Dental Brief.*

PLATINUM SOLDER FORMULA.—The formula for this solder is as follows:—To 360 grains of pure gold, which has been fused and kept at the boiling point in a carbon crucible, are added 120 grains of exceedingly thin pure platinum, the latter having been cut into narrow strips and gradually fed into the boiling gold. When the boiling mass has taken up all of the platinum, the intense heat is kept up until a point of incandescence has been reached, and a light produced which is too intense for the eye to tolerate. The molecular union of the two metals having taken place, the ingot is allowed to cool somewhat and is then plunged into water, and thence an acid bath for the purpose of proper cleansing. It is flattened upon an anvil and then rolled down to a twenty-six gauge thickness. The plate thus obtained gives us a twenty-five per cent. platinum solder, which should be properly marked in several places, and is ready for use. This solder, if kept thoroughly clean, requires no flux.—*H. E. S. Hayes, Dental Forum.*

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NO. 4

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## EDITORIAL.

### *Value of Community Organization of Dentists.*

**T**HAT community organization of dental practitioners has decided advantages is readily admitted. Its real value is not nearly appreciated by those who have not benefited thereby.

Among the larger cities it is unusual to find a place where there is not a dental society in existence. Among smaller places it is a rarity. The larger places have certain advantages and yet lack what is quite possible in districts with few of the fraternity because *all* the dentists are not included in the membership and seldom other meetings than those for mutual professional improvement are included in the program. Upon the other hand, it is difficult where only a limited number of dentists are in touch with one another to hold meetings to discuss dental topics. The absence of two or three leaves, it may be, but a similar number to assemble, and interest quickly lags. However desirable such mutual assistance may be, experience shows that if an organization is limited to gatherings for technical discussions the benefits derived are transitory or at best far short of possibilities.

What has been accomplished by one group, to the knowledge of the writer, may be advantageously made known to others. Following first upon an interchange of names of delinquent debtors, which was a first step in harmonizing the half dozen dentists concerned, a conference was held which finally resolved itself into a Dental Club. There has resulted a number of decisions for mutual protection and benefit which a year has proved to be most satisfactory.

The direct advantages that have been derived are a half-holiday weekly the year through, a minimum uniform scale of fees, a charge for consultation and penalizing for broken appointments without due notice.

The value of all this to the dentist is really much more than the question of dollars and cents. As a matter of fact the rearrangement in connection with fees made little, if any, increase in that regard.

The harmony promoted among the various members has been very gratifying. Little reluctance has been shown in asking for suggestions as to methods or patients. More courtesy has resulted in cases where patients are temporarily cared for during disability of regular dentist. Depreciation of another's work is unheard of, and in many other ways respect for one another is continuously shown.

All this adds very materially to the delight of daily work and is carried into social contact outside office practice.

Better still than this is the greater respect given by the patient, both because of the greater independence shown toward them by the dentist, and the perception they have of the cordial relations of the various practitioners.

The operator himself is gratified because he can feel that his clientele have chosen him because of their appreciation of him and his work, rather than because of unfair inducements of any kind being extended.

The existence of such a condition of harmony is an excellent thing to assist in promoting collective work either of an educational character or in charitable effort for the needy.

The smaller places as well as the larger ones hold many people who need dental service but are debarred because of lack of means, and it is difficult for the dentist to give the attention required even if so disposed. The question of determining who are really needy and also avoiding the risk of unfairly absorbing a confrere's patient, through gratui-



tous work, is not easily overcome.

How to best serve this need most effectively is a problem which may be solved to a large degree by the careful consideration of an organization working together for the best interests of the profession and the public.

It would be helpful if it were known how the poor are cared for in those places that have already made an organized effort in these matters.

F. W. B.

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**T**HE annual banquet of the Hamilton Dental Society was held on March 10th in the Hotel Royal. President Dr. R. T. McDonald was in the chair and proved to be a most excellent toastmaster. Dr. G. Wright Beach, of Buffalo, was the speaker of the evening and delighted all present with a most practical and instructive address.

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**D**R. S. E. FOSTER, who has practised dentistry in Wingham, Ont., for over fifteen years, is leaving for British Columbia for the purpose of engaging in practice in Vancouver. Dr. Foster has ever shown himself to be a public-minded citizen, and his removal is much regretted by all the citizens of Wingham.

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**D**RS. Maloney and Kennedy, of Winnipeg, were among those to suffer through the Avenue Block fire, and have taken temporary premises in the Somerset Block.

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**D**R. LEITCH, of Carlyle, Sask., is planning to open an office in Regina.

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### *Obituary.*

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**D**R. GEORGE ALTON REID, a pioneer dentist of Fergus, Ont., died at his home on Tuesday, 4th March, 1913. For the past forty-three years Dr. Reid practised in the same location and was held in the highest esteem by all the citizens. He was a well-known curler, a Presbyterian, in politics a Liberal, and a member of the Masonic craft. Death resulted after a lengthy illness due to heart trouble.

In the passing of Dr. Reid the profession in Ontario loses one of its pioneer members.

Dr. Reid is survived by his wife.

## *Oral Hygiene Reports.*

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**O**RAL HEALTH has made arrangements that make it possible to report each month the progress of oral hygiene in every part of Canada and the United States. The reports published in the last two issues give some conception of the extent of the oral hygiene propaganda.

Reports from Canadian points are so isolated that we are forced to the conclusion that educational work is not progressing as rapidly in Canada as in the United States. Are Canadian dentists more busy or less interested? We publish below reports that have come to hand since our last issue:

### *Jacksonville, Pa.*

Dr. Hiram Bird has made investigations with regard to the sale of tooth brushes in Jacksonville and has found that there are not enough brushes sold to supply one to every tenth inhabitant of the city.

Several societies, including the Women's Club and Board of Trade, have been urging the examination of the school children's teeth and the establishment of a dental dispensary. It has been definitely decided to have four dentists make monthly inspections for the balance of the school year upon the understanding that the city or Board of Trade will establish and maintain a dental dispensary.

### *Berlin, Ontario.*

The Women's Canadian Club of Berlin recently held a most interesting meeting, which was addressed by Dr. A. J. McDonagh, of Toronto, on the subject of oral hygiene.

### *St. Paul, Minn.*

The Wilder Charities has made an offer to maintain a dentist to have permanent direction over the St. Paul Free Dental Dispensary. The St. Paul Dental Society has been asked to select a man for this work.

### *Detroit, Mich.*

The first report made on the inspection of the teeth of the children in Detroit schools and on the dental work done for those who could not afford to pay for such service, has

fully demonstrated the wisdom of the appropriation made for these purposes less than a year ago.

The examination found 87 per cent. of the school children with decayed teeth, and 2,200 have been treated in the dental clinics. The other children needing dental service were sent to their family dentist.

*Cincinnati, O.*

The importance of clean and good teeth for children is emphasized by Health Officer Landis in the weekly bulletin of the Health Department. Dr. Landis declares that of 28,441 school children whose teeth were examined since 1909, 25,608 suffered from dental defects. He adds that "it requires children having defective teeth at least six months longer to complete the elementary school course than it does children not so afflicted." The Health Officer explains that in his opinion the expense incurred in employing a chief dental inspector, four dental operators and two assistants "will represent a real economy."

*Washington, D.C.*

The subject of "Oral Hygiene in Its Relation to the Prevention of Tuberculosis" was discussed by the Board of Directors of the Association for the Prevention of Tuberculosis. The watchword of the evening was "A Clean Mouth." Dr. W. C. Killinger, Dental Inspector in the public schools, made a report on his work, and the Association decided to issue literature to the public on the subject of the proper care of the teeth. It was felt that the simple injunction in the Association's health rules "clean your teeth morning and evening," is not sufficiently emphatic to meet the requirements of the teachings of oral hygiene.

*Newtonville, Mass.*

A dental clinic for the poor will be opened in the old Claffin School building. The equipment has been purchased under the direction of local dentists, and two rooms are to be altered and renovated for the purpose. The Social Service Committee of the Newton Federation of Women's Clubs is responsible for the project. Children who are in a position to pay regular dental fees will not be admitted. A sliding scale of fees will be charged the others. The worthy ones will obtain free service.

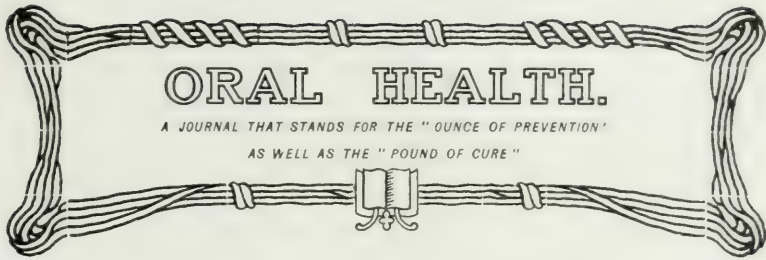
Opportunity  
has nothing to do  
with environment. It lies  
in the mental acumen, in the  
keenness of the eye to discern, in  
the strength of the hand to grasp  
and retain. Opportunity is  
in the man, not in  
the thing.





DR. GEORGE W. ROSS

Toronto



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***Oral Sepsis and the Principles, Practice  
and Application of Vaccine Therapy,  
to Dental Practice.\****

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BY GEORGE W. ROSS, M.B. (TOR.), M.R.C.P. (LONDON),  
Director Laboratory of Therapeutic Inoculation,  
Toronto General Hospital.

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I AM highly appreciative of the honor you have done me in asking me to address your Society. Please accept this expression of my appreciation. I sincerely hope that you may find something here and there in my address of interest and perhaps of assistance to you in the daily practice of your profession.

It is curious to note how all branches of biology, whether they deal with humans or not, are more and more becoming co-related; and, indeed, we are finding in the realms of the allied sciences of physics and chemistry, aids to diagnosis and treatment which would have been but "dream-shadows" less than a generation ago. So rapidly has the knowledge of medicine and of your own profession advanced, that the wonders of yesterday are but the half-interesting, half-remembered things of to-day; and it is well that it were so! Still waters soon die. There are only two signals on the dial of time: "Full speed ahead" or "Reverse," and it is surely "Full speed ahead" with both professions.

And are we not closely allied?—an alliance, indeed, which, I am sorry to say, few in either profession sufficiently

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\*Read before the Toronto Dental Society, April 14th, 1913.

realize. But more and more is the evidence accumulating to indicate how important it is for the physician to consider the mouth and what it contains, in so far as certain general disorders are concerned, and similarly for the dental surgeon to realize the great part he can play in controlling these disorders—nor should I forget the immunologist, who is the hand-maiden of both.

Another curious fact attests to the bizarre workings of the human mind. Physicians have long recognized that the nose and upper respiratory tract with its sinuses are important causes of general disorders, and yet it is only comparatively recently that we have turned our attention to the mouth. Perhaps because it is so obvious!

One of the first to point out the importance of “Oral Sepsis” was William Hunter<sup>2</sup>, and I should like to record my appreciation of his great work. In years to come it will be recognized as one of the most valuable contributions to medicine. What is “oral or mouth sepsis”? Briefly, it is any infection in any tissue in front of the anterior pillars of the fauces. The possible sites of infection are numerous, but I will not detain you with such diseased process as affect the tongue, hard palate, cheeks, etc., but rather direct your attention to those diseases of the teeth and adjacent structures which influence the general health of the individual.

Dental caries would undoubtedly be the most serious of all if your science were unable to control it effectually; and, indeed, should you fail in this modern dental practice comes to the rescue with dentures, often far more ornamental than those originally provided by the Almighty.

There is one common disease, however, which tries your patience and your ingenuity to the uttermost. I need hardly say that I refer to the disease commonly known as “Pyorrhœa Alveolaris.” Is it exaggerating to say that 15% of all cases over the age of 30 years who consult you are afflicted with this disease? At any rate it is exceedingly common, and to my mind there are few chronic disorders so far reaching in their ill-effects upon the human organism. And yet how slow both our professions have been to recognize this, that is so obvious, when once we turn our minds to consider it, for here we find one or many pockets between gums and teeth crammed with secretion, laden with millions of micro-organisms and their toxic products, and, in addi-

tion, tissues of the gums infected.

The latter are in direct communication with the lymph-stream that can and does convey the organisms or toxins to the lymph nodes in the neck and thence, perchance, eventually to the blood stream. This is one way in which these infective processes reach the human organism. Another way is by the alimentary canal, and still another by way of the nose or antrum of Highmore or the Eustachian tubes or the respiratory tract. Nothing is more certain than the propagation of bacterial infection by continuity or contiguity of susceptible tissues.

Now the effects of pyorrhœa alveolaris may be (a) local, (b) adjacent, (c) distant and local, (d) systemic.

I need not detain you with the local changes—you are more familiar with them than I. Adjacent pathological changes are found in (1) inflammation of the maxillary and lymphatic glands. (2) Suppuration in the antrum of Highmore. (3) Nasal and naso-pharyngeal infection. (4) Infection of the middle ear by way of the Eustachian tube. (5) The hair follicles of the lips causing sycosis bartæ.

The distant and local pathological changes are to be found (1) in the gastro-intestinal tract—causing the symptoms associated with so-called “indigestion” and also at times diarrhœa. (2) In such respiratory disorders as bronchitis, etc. (3) In certain forms of chronic arthritis. (4) In certain cases of so-called neuralgia or neuritis, sciatica, etc. (5) Possibly in psoriasis, certain eczemas, and urticaria.

The systemic effects are due to absorption either directly by way of the lymphatic stream from the gums or indirectly through the gastro-intestinal tract. Mental and physical inaptitude are characteristic—neurasthenia, depression even to melancholia and limitation of physical effort. A moderate or severe secondary anæmia is common and, indeed, certain authorities believe that oral sepsis indirectly gives rise to certain specific hæmolysins that effect the blood changes characteristic of pernicious anæmia. This is a large order you will say! But is it large enough? I do not think so— I am confident that when the final audit comes in after years many other disorders will be traced to pyorrhœa alveolaris.

Then there are other affections of the teeth and gums that merit some if a less consideration. These are dental caries, chronic and acute gingivitis, ulcerative gingivitis and



alveolar abscess. But we need not be detained longer than their mention necessitates.

What is the cause of pyorrhea alveolaris? It is safe to say that no one knows. Bacteriological investigation readily demonstrates a veritable menagerie of micro-organisms, not one or more of which has even been "found guilty" of causing this disorder. In direct smear of the pus under the microscope numerous different organisms are recognizable by their morphology or staining reactions, but it is curious that on cultivation of the flora contained in the pus from pyorrhea alveolaris one commonly finds only the streptococcus brevis, pneumococcus (Medalia); at times other organisms are associated, such as the staphylococcus aureus or albus or a strepto bacillus micrococcus catarrhalis. And, indeed, there are many others with which we need not burden our minds.

These bacteriological considerations would be only of academic interest were we not in a position to harness them to a method of treatment that would seem to be of service. But before proceeding to a consideration of this method it would seem fitting to discuss certain fundamentals concerning bacterial invasion of the body in general, of immunity, and of methods of inducing immunity to micro-organisms.

It is of interest to recall exactly what is a bacterium—it is "a microscopic spot of protoplasm contained in a envelope, able to reproduce rapidly by direct fission, dependent upon an adequate and appropriate food supply in a suitable temperature and also capable of secreting certain toxins or poisons."

It is instructive further to note that only a small proportion is pathogenic to man. Indeed were it not for bacterial life this planet would be a veritable charnel house—millions of dead humans and other animal bodies would encumber the surface of the earth, for putrefaction would not occur; and hence there would be no reduction of the complex organic or "vital" substances to the elements from which they had their origin.

It would take us too far afield to follow this interesting question further, and with your permission I shall proceed to certain other matters.

But how is it that certain pathogenic micro-organisms are unable to infect animal tissues while others are? For the simple reason that on the one hand the exposed tissues

or body fluids possess an immunity or a power of resistance to the particular germ or germs, and on the other hand they lack this power. By immunity then is meant that an individual can control or ward off attacks of a micro-organism, owing to some inherent power of the tissues or body fluids. Now we may be born with this power, when we are said to possess a *natural immunity*, or we may acquire it as the result of having a certain disease, and this is called a *naturally acquired immunity*—such as occurs after an attack of smallpox, scarlet fever and so forth; or, again, we may possess an *artificially acquired immunity*—for example, after vaccination against smallpox and inoculation against typhoid fever or diphtheria. And it is this last variety of acquired immunity that possesses such vital interest for those of us interested in combatting bacterial disorders, either in their prevention or their cure. No realm of medicine in recent years has seen such startling advances as this science of immunity, and yet how old the principles! Centuries before Christ we know that groping primitive minds hit upon certain practices of immunity that the brightest intellects of our generation have re-discovered and led into the fold of modern medicine. I refer to the shepherds of Upper Senegambia—a territory south of Morocco—it was their custom to immunize a herd of cattle threatened with decimation by epidemic pleuro-pneumonia. They impregnated the point of a dagger with a little of the diseased lung tissue of an animal dead of this disease and then plunged it in beneath the skin of healthy animals. “There is nothing new under the sun.”

Now an artificially acquired immunity can be obtained in two ways in particular. The first is commonly practiced in the treatment of diphtheria; you are all familiar with diphtheria anti-toxin and cognizant of its great service to humanity in controlling this serious disorder. How is the anti-toxin produced? Simply by taking cultures of the diphtheria bacillus and by inoculating a horse over a considerable period with gradually increasing doses of the living germ. Eventually the animal's body-fluids become so laden with the anti-toxin against the bacillus of diphtheria that it can tolerate a dose of living bacilli sufficient to kill a herd of horses. The horse is bled, the blood allowed to clot and the serum extracted. This amber-colored fluid is the anti-toxin or serum against diphtheria. It serves the afflicted human by effectually neutralizing the toxins or poisons produced by the diphtheria bacillus, and which cause the mani-

festations of the disease as we know it. This discovery marked an epoch in therapeutics, and it was naturally supposed that a serum could be prepared for each and every organism that afflicts suffering humanity; but, unfortunately, in spite of the earnest endeavors of thousands of investigators, only a few sera have survived the test of experience—diphtheria anti-toxin, anti-meningococcus serum (for cerebro-spinal meningitis) and possibly anti-streptococcus and anti-tetanus serum.

I need not detain you with the scientific reason for this failure, but will proceed to another method of inducing immunity which more intimately concerns us in our work. I refer to the use of bacteria or their products or the so-called bacterial vaccines. They act by calling forth an immunizing response in the individual inoculated with an appropriate dose; or, in other words, these bacterial products induce the individual to manufacture anti-bodies that are specific for the germ inoculated. But I shall have occasion later to illustrate this method when I come to speak of vaccine-therapy in pyorrhœa alveolaris and other disorders.

Before proceeding to more practical considerations I wish to draw your attention to a certain great principle in naturally acquired immunity. Have you ever asked yourself why an individual who gets typhoid fever or any other infection does not die? It cannot be because of an inability of the typhoid bacillus to multiply sufficiently rapidly, for it is theoretically possible for one bacillus to multiply in 24 hours so that 280,000,000 are produced. There can be but one answer—namely, that resident within our tissues is a certain machinery of immunization which, when set in motion, turns out substances capable of combatting, and as a rule controlling, the vital activities of the typhoid bacillus. Let that be granted—then what is it that is capable of setting his delicate machinery in motion? Again there can be but one answer—the typhoid bacillus or its products carried by way of the blood and lymph streams to the tissues whose work it is to produce specific anti-bodies. This great principle carries the name auto or self-inoculation. Acute infections such as typhoid fever, pneumonia, scarlet fever, etc., usually kill or cure within a comparatively short time—kill if the patient refuses to respond to auto-inoculation sufficiently, and cure if he does. On the other hand, chronic disorders such as boils, pyorrhœa alveolaris, inflammation of the bladder, etc., etc., frequently persist for long periods



because the foci of infection are not close enough in contact with lymph or blood streams to allow of auto-inoculation. Hence the individual's immunity to his infecting organism remains below normal, and organisms are carried to adjoining or other parts of the body and set up fresh manifestations of his disease. It is interesting to note that it is the chronic infections that torture humanity—the acute only kill; and I would submit that boils are productive of more real suffering in any modern community than typhoid, pneumonia, and erysipelas put together, and, too, that pyorrhea alveolaris chiefly in its general manifestations causes more trouble than all four together.

May I repeat that much more suffering in this world due to bacterial disease can be traced to micro-organisms which torture body or mind or both but seldom kill.

If auto-inoculation could be induced or closely simulated so would we employ the method of nature in her control of acute infections; and fortunately we can. It has been found that devitalization of organisms by moderate heat or mild antiseptics does not so alter their chemical constitution that they are incapable of calling forth a response similar to the living organisms. But where is the proof of this extraordinary conception?

The proof is two-fold. In the first place laboratory and in the second chemical. When the Romance of Medicine comes to be written, a hundred years hence, no chapter will be more wonderful than that which tells of the discovery and measurement of those antibodies within the body-fluids, their relationship to immunity and the course of bacterial diseases. Here then we find one proof that dead bacteria are capable of setting in motion that machinery which produces such anti-bacterial bodies as agglutinins, opsonins, etc. If we inoculate a human being with say 500,000,000 dead typhoid bacilli and wait a fortnight, it can be shown that his blood serum well diluted will agglutinate or stick together typhoid bacilli where before inoculation it would not do so, unless in almost normal concentration. Similarly, should we inoculate with 300,000,000 dead staphylococci the phenomenon of phagocytosis (or ingestion of bacteria by leucocytes) is more active than before inoculation. There is no guess-work in this—it is all cold-blooded determination of biological facts almost as definite as is the difference between a gramme and two grammes of anything, and yet we are dealing with substances that have never been iso-



lated, but whose presence in one or another amount can be inferred unquestionably by certain delicate biological reactions. No more wonderful is the telephone, wireless telegraphy, the phonograph or many another wonder of physics or chemistry, than this product of the subtle scientific minds of modern investigators into the problems of immunity.

And yet, "lest we forget," is there not even here a lesson in humility? A lesson that has come to me at almost every turn in my scientific studies, little as they have been. Alter a living thing ever so little and destroy "life"—in the light of creation it is *nothing*, though in the eyes of man it may seem practically the same!—for a time at least. Between life and death, as well with the lowest forms of plant or animal life as with the highest, there is the same deep and unalterable chasm, as deep and as wide with the lowest as the highest, and only bridged by that inscrutable, unknowable subtlety of the Creator called Life. Does it not startle one and make one wonder whether we are not simply a little part of that infinite and eternal primeval living protoplasm cast into a different mould by some almighty power? But please forgive this digression!

The second proof of the power of dead bacteria to produce antibodies is found clinically in the results of treatment of various bacterial disorders. "The proof of the pudding." So, those who have seriously applied the method of vaccine therapy, or the use of bacterial vaccines in the treatment of disease, are almost unanimously agreed as to their efficacy. Perhaps even more convincing evidence is afforded in the use of dead bacteria for the prevention of disease; one example will suffice. Out of 12,000 American troops camped on the Mexican border for some months a year or two ago, all inoculated against typhoid fever, not one contracted the disease—thanks to the discovery of this method by my distinguished preceptor, Sir Almroth Wright. To him also we owe the epoch-making conception that the human organism can be stirred into activity against any bacterium provided we can grow the offending micro-organism.

May I now indicate the method of approach towards the treatment of a bacterial disorder by bacterial vaccines, by referring to the common condition known as "boils," or furunculosis?

*First.* Cultures are made from the pus. These invariably show an organism known as the staphylococcus pyo-

genes aureus—or the yellow pus-forming staphylococcus.

*Second.* A “soup” of these millions of germs is made by pouring over the surface of our cultures a dilute salt solution.

*Third.* The number of cocci in each cubic centimeter of this parent liquor is estimated; the living germs are killed; and then the concentrated “vaccine” is diluted with salt solution so that each cubic centimeter will contain say 600,000,000 dead staphylococci.

*Fourth.* Two injections of from 300,000,000 to 600,000,000 are given each week for three or four weeks, and with appropriate local treatment we are thus able to control the infection.

And so we proceed in any other case of bacterial infection. It may be necessary to vary the dose or the interval between inoculations; again there may be not one micro-organism as in boils, but many as in pyorrhœa alveolaris or bronchitis or a tuberculous sinus. In these cases it is not necessary to use corresponding vaccines for each organism inasmuch as the tissue response following inoculation is specific for each vaccine.

Having thus indicated the principles of immunity and of vaccine therapy in general, and particularly with respect to boils, may I now proceed to consider pyorrhœa alveolaris? Although I have studied quite a number of cases of this disorder bacteriologically, I have treated very few, and those some years ago. In fact, my results were so indifferent that I lost what little faith I had in vaccines for pyorrhœa, but now I know that my failure was probably due to having relied solely upon vaccines—a fatal mistake.

In the following remarks I am quoting largely from the papers of two excellent and reliable investigators—Dr. Kenneth Goadby<sup>1</sup> and Leon S. Medalia<sup>2</sup>. The morbid changes in pyorrhœa, according to Znamonsky (quoted Medalia<sup>2</sup>), are as follows: “The disease begins with an inflammatory process of the gum margin at the gingival space; it destroys the epithelial tissue and gradually involves the bones, which latter become necrotic. New bone formation (osteoid tissue) takes place and results in a partial involucrum (a partial encapsulation). It is the involvement of the bony socket which is considered by almost all the observers to be the characteristic feature of the diseasee.”

Practically everyone is agreed that there are two factors concerned in the etiology of pyorrhœa alveolaris; the first

is mechanical injury to the gum margin, chiefly by the accumulation of tartar, but a demonstrable traumatism is not invariable, for the disease seems to occur at times quite independent of any evident or known injury to the gum margin.

The second factor concerned is infections; and here we meet with a striking difference of opinion among those who have devoted especial attention to the bacteriological study of the organisms, especially in those cultured from the pus which exudes from the gum-pockets. All are agreed that very many varieties of micro-organisms can be seen in direct smears from the pus (and I shall not trouble you with further details), but the results of careful cultural investigation are strangely at variance. For example, Medalia asserts that the pneumococcus in chains (*streptococcus lanceolatus pneumoniae*) is by far the commonest. He obtained it in 107 cases out of 112—alone or with other micro-organisms; and says that this is the organism which Goadby calls the *streptococcus brevis*—found almost invariably by this investigator. At any rate, however numerous and various the organisms observed in direct smear of pyorrhoeal pus, one commonly only finds a short-chained *streptococcus pneumococcus*.

I hesitate to burden you with the details of the bacteriological investigations of these and other workers inasmuch as sufficient can be set down briefly for our immediate purpose. The other organisms that occur are numerous, but in addition to that just mentioned we have a long-chained *streptococcus* (*streptococcus pyogenes*) *staphylococcus aureus*, *micro-coccus catarrhalis*, and a *strepto bacillus*. One or all of these may occur in any given case.

Goadby and also Medalia endeavored to determine which organism or organisms isolated were the chief offenders by estimating the resistance of the blood to them by the so-called opsonic index. To my mind there are grave doubts that much assistance was obtained by this procedure, and its very laboriousness excludes it as a practical method in the vast majority of cases of pyorrhœa. One consideration alone is sufficient to make us hesitate to use the opsonic method, namely: may not those organisms (such as the spirilla and the bacillus fusiforms which we cannot grow at all or only with great difficulty) be important etiological factors? At least there is no conclusive evidence that they may not be, although we have certain therapeutic tests that indicate that they are not of essential importance *alone*.



But are these bacteriological observations only of academic interest? Fortunately not!—if we credit the best opinions obtainable—and I can see no reason why we should not do so. Certain it is that pus-forming cocci are largely concerned in the continuance of this disorder, and so our minds naturally turn to the principles of artificially acquired immunity and the measures available for inducing it. In other words, we ask ourselves can bacterial vaccines prepared from the organisms recovered from the pus in a given case help to control the morbid process? The answer is probably in the affirmative.

With respect to a case of pyorrhœa alveolaris, what is the method of approach if we are desirous of using appropriate bacterial vaccines? The principles are identical with those referred to in the case of boils, only the bacteriology is more difficult. There is only one organism in the pus of a boil, whilst many are found in the pus of pyorrhœa, which must be isolated before the appropriate vaccines can be prepared. It is necessary to exercise great care in making the first culture. The gum margin should be thoroughly cleared of adherent foreign matter and then cleansed with several applications of sterile water. If the pus is abundant it is well to press out some of it, remove it, cleanse again with sterile water, and then pass a looped platinum wire into the gum-pocket. Cultures are made on blood-serum or special blood-media in such a way that individual colonies will be found after 24 hours incubation at body temperature. Portions of all colonies that appear different after careful study are transferred to fresh culture tubes and so grown in "pure culture." We now ask ourselves which of these organisms shall we select for our vaccine? Goadby and Medalia in particular have endeavored to overcome this difficulty by estimating the patient's resistance to each organism by opsonic methods and, indeed, have succeeded in doing so. That is to say if the opsonic index of a patient's blood was 1.0 (or normal) to a staphylococcus isolated from his pus and say 0.6 (or 6/10ths normal) to a streptococcus or micro-coccus catarrhalis, than the streptococcus or catarrhalis vaccine would be selected. But is this laborious refinement necessary to rational bacterio-therapeutics? I am confident that it is not. Because even if the staphylococcus be not concerned in maintaining the infection, the use of an auto-genous staphylococcus vaccine on our patient can do no harm even if it do no good. It therefore suffices to prepare



an autogenous vaccine from each organism isolated and obtain a composite vaccine. But how do we standardize such a vaccine? We are able to do this as the result of both laboratory and clinical experience, by which we have learned the optimism dose for the majority of different micro-organisms. For example, we use 300,000,000 dead staphylococci, 10,000,000 dead streptococci, 50,000,000 dead catarrhalis as initial doses, and so we put into each cubic centimeter of our composite vaccine this amount of these three vaccines; and likewise for any others that might have to be considered.

The vaccine is administered hypodermically in the upper arm and two inoculations each week are given.

Now what happens when we introduce our composite vaccine beneath the skin of our patient? Briefly, the tissues responsible for the manufacture of anti-bodies are stimulated into activity and produce an anti-body to each organism that is represented in our composite vaccine. These anti-bodies find their way into the blood stream and are carried to the site of infection—namely, the gums, alveolar margins, and periodontal membrane, where they participate in controlling the activities of the organisms at work there; just as the anti-bodies to the staphylococcus reach the focus of infection or the boil, and so assist in destroying the living staphylococci at work.

I shall consider later the evidence as to whether or not this therapeutic measure is of service even in helping to control pyorrhœa alveolaris; in the meantime may I turn to certain general considerations of interest and importance? From the beginning of medicine human endeavor has been particularly directed towards the discovery of a specific remedy for each disorder that afflicts our race, for so we touch a particular spring and lo! the sufferer is well. How this appeals to the imagination—wonder of wonders! Even at this day we are stirred to the ultimate depths of our beings at the announcement of a positive cure for most cases of tuberculosis! And yet how often are we doomed to disappointment! Nevertheless, so keen is modern science in this search that thousands of the acutest scientific minds of our generation are as earnestly bent upon this matter as Peary, Sir Ernest Shackleton and Amundsen were in searching for the poles of our earthly sphere.

But what of the so-called specifics? If we mean by a specific a substance successfully directed against the par-

ticular cause of a disease, then we have a few; you are familiar with the use of quinine in malaria and mercury and Salvarsan in syphilis. These are the drug specific. And it is interesting to reflect that neither of these disorders is due to bacteria, but to micro-organisms more closely allied to the protozoa. The other class of specifics contain the sera—diphtheria anti-toxins, etc. And the third the bacterial vaccines.

My contention, however, is that you as dental surgeons and we as physicians should not allow our minds to dwell too much upon a specific remedy in a given case, for this reason that it is not simply the case of a disease itself that we are endeavoring to combat, but more commonly its effects already established in the sensitive human organism. It therefore follows that however definite and complete a specific we may possess, if we are to do our full duty as broad-minded practitioners, we must never forget the complexities of the individual sufferer before us.

My work for the past ten years has chiefly been the application of specific remedies to the bacterial disease, but fortunately I have been in close touch with the general practice of medicine, and the farther I go the more convinced I become of how essentially important it is for the active immunizator to have clinical knowledge and experience. So in the treatment of pyorrhœa alveolaris—to inject appropriate autogenous vaccines and do nothing else is futile, as I have learned to my disappointment. The problem is much greater than that. We must take cognizance of at least three measures if we are to succeed.

*First.* Appropriate instrumental treatment of the foci of infection concerning which I hope that Dr. MacDonagh and others will inform us.

*Second.* Control of the systemic manifestations of the disease.

*Third.* Administration of appropriate autogenous vaccines.

It is a moot point as to whether gastro-intestinal disturbance, physical debility, and mental hebetude precede and prepare the soil for the micro-organisms which then gain a foothold in the tissues and cause pyorrhœa, or are these secondary to the infection? My own strong belief is that most of the vital disturbances are secondary to the pyorrhœa. Certain it is that control of the disease is commonly associated with an improvement in general health

and in those various adjacent or distant manifestations of pyorrhœa that have been referred to in particular gastro-intestinal disorder, joint and skin affections, etc. And it is in the beneficial change that takes place in those conditions secondary to pyorrhœa that, by common assent of those we know, we find the most eloquent plea for the use of vaccines.

Of what value are bacterial vaccines in controlling the pyorrhœa itself? As an isolated therapeutic measure they are probably useless, but combined with skilled dental treatment and certain general measures, they are of distinct service, according to the best belief of numerous investigators.

But how are we to be certain that appropriate vaccines aid in controlling or curing pyorrhœa? I know of nothing more difficult in medicine than to estimate the value of a new therapeutic measure. Are you to accept statistics of an unknown man? or even of a known investigator? If we do so it is with more or less reluctance, for we know how the desire for achievement, errors of observation or judgment, and over-enthusiasm have led us astray from time immemorial. Hence we do not hasten to accept unreservedly the *ipse dixit* of any man. How then do we gather faith out of doubt and skepticism? Either through personal experience or the acceptance as true of the accumulated experience of a sufficient number of men in whose judgment and honesty we believe. So every remedy that we accept to-day has had to run the gauntlet of our respective professions before gaining entrance to the fold. I submit that on the whole this attitude of mind is much more likely to lead to the truth than that we should reach out with open arms, and child-like embrace each new alleged remedy.

In so far as pyorrhœa alveolaris is concerned, a number of capable investigators report satisfactory results. I shall quote only a few, but these are representative of the views of practically all who have combined vaccine-therapy with local and general treatment.

Goadby<sup>4</sup> 70 cases of early pyorrhœa treated by vaccines; 45 cured, 13 relieved, 11 disappeared, 1 died of intercurrent infection. Goadby believes therefore that 60% of early cases can be cured with the aid of vaccines, and thinks that the outlook is dark for those not treated with them.

Again, Jones and Humphreys<sup>5</sup> report 5 cases with good results.

Eyre and Payne<sup>6</sup> reported the results of the treatments of 26 cases of pyorrhœa as follows: 21 cured and remained



cured from nine to fifteen months, 4 improved, and 1 died. All these were advanced cases of the worst type. They were all followed up with vaccine treatment as well as local and general treatment.

Beebe<sup>7</sup> reported 17 cases of pyorrhœa treated with good results by vaccines.

Medalia<sup>2</sup> also reports excellent results and, inasmuch as his series of cases is the largest yet published and the work undertaken on them so complete, I propose to quote him at some length as follows:

"The results of the treatment have been classified as 'cured,' 'improved' and 'no improvement.' It might be well to state here what I mean by the term 'cured.' I considered a case cured when the local condition of the gums became healthy as to color and firmness, when no pus could be squeezed out of the sockets, when loose teeth had tightened up, and when no inflammatory condition was found; also when symptoms such as bad metallic taste in the mouth, soreness and bleeding of the gums, and tenderness during mastication disappeared. The recession, of course, that took place before treatment was begun could not be mended by this or any other treatment; further recession, however, was checked. Finally, when other systemic symptoms present, such as rheumatism, gastro-intestinal disturbances, and neuralgic pains, also disappeared or were relieved, and the patient considered himself as feeling 'quite well.' When these changes for the better in the patient's condition lasted for several months without a recurrence, I thought I had a right to consider such a case as cured.

We will now discuss the cases under their respective groupings:

"*Group 1. Incipient stage (14 cases).*

"*Results.* Of 14 cases 13 were cured, while the remaining 1 was greatly benefited.

"*Group 2. Moderately advanced stage (16 cases).*

"*Results.* Of the 16 cases, 15 were cured and one was benefited.

"*Group 3. Far advanced stage (85 cases).*

"*Results.* In this group of 85 cases, 37 were cured, 40 were markedly benefited, 4 unimproved, and 3 dropped out. One was treated by his dentist and no record obtained from him of the case.

"Of the cured cases, 5 remained cured for from thirty to



thirty-six months, 11 from twenty-six to twenty-nine months, 8 from twenty to twenty-four months, 9 from fifteen to nineteen months, 8 from twenty to twenty-four months, 9 from fifteen to nineteen months, and 5 from five to twelve months. The improved cases remained improved for several months or years, some getting progressively better even after discontinuing treatment, while others remained stationary."

Whilst endeavoring to present the subject of "Oral Sepsis" chiefly by a discussion of pyorrhœa alveolaris, I have tried to indicate those broad general considerations of immunity and therapeutics, and I sincerely hope with at least some little measure of success.

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1. Goadby. "The Erasmus Wilson Lecture on Pyorrhœa Alveolaris." *Lancet*. London, March 9, 1907.

2. Medalia. "Chronic Alveolar Osteomyelitis (Pyorrhœa Alveolaris)—Its Causes and Treatment with Vaccines." *Dental Cosmos*, Jan. and Feb., 1913.

NOTE.—This paper contains a most excellent and comprehensive review of the whole subject besides offering much that is new.

3. Hunter. "Oral Sepsis as a Cause of Disease." *Practitioner*. London, 1900.

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5. Jones and Humphreys. "A Note on the Treatment of Pyorrhœa Alveolaris by Inoculation with Bacterial Vaccines." *Lancet*. London. Vol. II., 1907.

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#### DISCUSSION.

DR. A. J. McDONAGH, TORONTO.—When the history of Ontario is written and when educational matters are given their proper notice, there is one man whose name will stand out prominently as an educator, perhaps above all his other qualities, although he was one of the greatest orators the country has ever heard, a statesman and an honest citizen, and that is the Hon. Senator Geo. W. Ross.

To-night this Society has been favored and honored by the son of that grand statesman, who is hewing a path in

medical science which is giving him the prominence in that world which his honorable father attained in the political. And you will all agree with me that for an educational treat we have never had anything to surpass Dr. Ross' paper. And I am sure Dr. Ross in closing will further favor us with a few remarks regarding Dr. Friedmans' treatment, of which he probably knows more than anyone else in Canada.

I do not feel competent to discuss this excellent paper, but as no person else seemed willing to accept the task, it was given to the man who had least to do.

First we have to consider the conditions in the mouth which give rise to the breaking down of the tissues surrounding the teeth, in other words, periodontalasia, which term includes gingivitis, alveolitis, haliteresis of the alveolus and osteomyelitis of the alveolus and maxillary bone, as well as recession of the gum at the gingival margin.

In these different phases of the disease commonly called pyorrhœa alveolaris, it is evident that opsonic vaccines would have but influence on those which might result in pus formation.

For instance, recession of the gum margin, the etiology of which is well known to you, would not be influenced by the opsonic index of the blood, nor is simple gingivitis due to salivary deposits any more likely to be. Salivary deposits of calculus themselves, in the most indirect and remote possibility might be influenced, but if there is any virtue in vaccines, and we will consider this point later on, so far as the conditions of the mouth are concerned, it would be in treating those conditions which result in the formation of pus or rather which result in the invasion of the soft tissues by micro-organisms which are capable of producing pus or which by their action were necessary to the life of the micro-organism that had the power of destroying tissue.

Opsonic vaccines, of themselves, to be of any great use in treating mouth lesions other than those of the mucous membrane, must be used before the micro-organisms have had the opportunity of converting the tissues of the cells which come in contact with them into a calcareous deposit, in fact would have to be used as a prophylactic measure to prevent the destruction of living tissue bacterially.

Speaking more particularly, in treating the disease pyorrhœa alveolaris, and I use the term here to mean what it says, opsonic vaccines which are capable of raising the re-

sistive power of the white corpuscles of the blood, capable, if you like, of increasing the appetite of the leucocytes, may be useful in staying the disease, but is it necessary to use vaccines to arrest the disease *pyorrhœa alveolaris*? Or is it wise? If it were necessary, then detergent and surgical means which we employ every day in our practice of themselves would be of no avail.

As a matter of fact, I can assure you, gentlemen, that it is true, that without the aid of opsonins, a skilful operator is able to affect a cure in at least 90 per cent. of all cases of *pyorrhœa alveolaris* which present themselves, that is, he is able to stop the pus from flowing, he is able to eliminate the inflammation from the soft tissues, and he is able to get the tissues to grow comparatively closely about the necks of the teeth, and this in what are considered the extreme cases.

The other 10 per cent. of the cases which one meets, probably in 5 per cent. of them the operator will be able to succeed with 75 per cent. of the teeth in that mouth, then there is 5 per cent. left which would be considered hopeless, or even if not considered hopeless at the time of operating will recur and cause after-trouble.

Now in this 95 per cent. of the cases which present themselves vaccines or other systemic treatment must necessarily be considered as an adjunct of variable efficacy. Of course, in the simpler cases, where the removal of the deposits carefully done and the disinfecting of the root surfaces will give you healing with one treatment, no man will be foolish enough to use an unnecessary adjunct. But there are cases which require more attention than that just described.

I have had the privilege of watching Dr. Dunlop operating, and I have had the opportunity of using his machine, and although I would say it was very doubtful if it should be used at all, still there is no gainsaying the fact that the administering of his gas under pressure onto the gum has demonstrated that conditions which I at least did not think existed are prevalent in cases of *pyorrhœa*.

I have seen a needle jet of gas blown on the gum at the bicuspid and come out behind the second molar on the same side without any apparent travelling through the gum tissue, which demonstrates, I believe, that the whole alveolar tissue had become infected with organisms and had lost a certain amount of lime salts, lost enough of them to make the bony tissue spongy.



Now, gentlemen, you know the doctrine that is often quoted, if you extract the teeth in pyorrhea the disease will disappear. That is not true. I have had many cases, and I have no doubt others of you here have had, when the teeth have been extracted and the gum has healed over and had to be opened again on account of necrosed bone and pyorrhœal conditions, and we have many cases where the gum will not heal until an operation is performed. Dr. Goadby, in the February number of *The Practitioner*, 1912, reports a case as one of many which had healed up and yet the neuralgia was prevalent on that side of the face until the gum was opened again and an infected area scraped.

Dr. Fletcher, of Cincinnati, also reports a number of cases, and at the Northern Ohio Convention, 1912, demonstrated his method of treating such cases. Dr. Fletcher attributes many cases of facial neuralgia to irritation at the peripheral end of the nerves in the maxillary bones, the irritation of course being due to dead periosteum as a result of infection.

Now in those cases where that condition is likely to exist it does not take a very astute intellect to realize the prodigious fact that opsonic vaccines are of inestimable value, but even so, you may say that those are the rare cases and that a dentist in general practice would not meet one of those cases in two or three years, neither will he meet a carcinoma, or necrosis once in two or three years nor an abscess in the antrum, nor a tumor therein, but when he does meet these conditions he should be able to cope with them. And I must disagree with those enthusiasts of opsonic vaccines when they say that every man should be prepared to inject millions of micro-organisms which are supposed to be dead into every patient who comes under his care.

I repeat what I said in discussing Dr. Lehmann's paper at Cedar Point, that it is a wrong doctrine, that it is an unnecessary extreme, for every dentist who sees a case of pyorrhea to whip out a hypodermic syringe and inject into the patient a few million micro-organisms.

Dr. Ross has said that the micro-organisms found in direct smear did not correspond with the micro-organisms which we obtained through culturing, and that is true. It is also true that there is a great difference between the smears made from the organisms we find in the superficial pus and the micro-organisms taken deep down in the pocket.

And it is easy to understand why this difference should



be, when we consider the conditions we have in the culture media, in the free flowing and unprotected pus, and in the pus deep down in the pocket. In order to obtain micro-organic growth always the same, we must always grow it under the same conditions, even the same micro-organism will change its characteristic in different environment.

Take the *staphylococcus aureus* found on the mucous membrane of the mouth, and you have a comparatively harmless organism, pass that same organism through the body of an animal in such a way that it has not such free access to oxygen, and you get a much more virulent organism. The environment is different. One-sixth of the mouths which have been examined by investigators contain the bacillus to which is attributed the disease of diphtheria, and it does no harm; but under certain conditions and the environment being suitable, we have it as a disease-producing organism, and we also find the morphology of the germ altered.

And so we might travel through the whole list, one investigator claiming that he had found a new germ, while his neighbor claims it is the same germ in different process of development. And who is going to contradict them? It is practically certain that all the germs in the mouth will not be grown culturally until you have a cultural media which is identical with the conditions which are in the mouth.

For instance, there are germs in the pus pockets in pyorrhœa which could not grow unless they had the acid media produced for them by the other micro-organisms found there.

We have conditions suitable for aerobic and anaerobic micro-organisms, we have a peculiar temperature and a peculiar pabulum on which they are accustomed to exist; we have all of those conditions as well as constantly forming and emanating gases, particularly carbon dioxide.

But, gentlemen, all this, though intensely interesting to you and to me, is in a manner a digression and we must come back to a different point in Dr. Ross' paper as a sort of a foundation for the work in hand. That point is where Dr. Ross says that it is practically agreed that we do not know the cause of pyorrhœa, and, gentlemen, if we are looking for the cause from the bacteriologist standpoint and trying to attribute the disease to some specific germ that would be guilty of all forms of this disease, then Dr. Ross' assertion would be right. But before asserting that Dr.

Ross is entirely wrong, let me ask him what he means by pyorrhœa, or rather which phase of the disease he designates by the term pyorrhœa? I take it that he is using the term pyorrhœa alveolaris as an omnibus term, as is so often done, and I would like to suggest to those who use it as an omnibus term that they examine the word periodontoclasia and see if it does not more accurately express what they desire to say. Are we speaking of pyorrhœa as a result of scurvy, of mercury, of lead, of faulty metabolism, of exhaustion, or anæmia, or is it the disease Dr. Black designates as phagadenic pericementitis.

If we are speaking of any one of those peculiar phases of the disease, excepting perhaps the latter, it will be very difficult for us to attribute the cause as the infection of any one specific organism, and if it is not caused by any one specific micro-organism, of what use would vaccines be to us? Let us see what has been done.

Dr. Ross speaks of Dr. Goadby and Dr. Medalia, two splendid investigators, but neither one of whom is, as we understand it here, a practical dentist.

Dr. Kenneth Goadby of the Department of Public Health in London, Eng., has given a great deal of attention to vaccines. Some years ago he was practically sure that the staphylococcus was the cause of pyorrhœa, and he made autogenous vaccines, so he claimed, from this particular germ; he injected those vaccines in the sub-clavicular region of the patient and had gratifying success.

Dr. Medalia was sure it was the diplococcus pneumoniae some years ago; he injected serum made with his pet germ and had gratifying success.

Namon and others use a long chain staphylococcus, some used a mixed serum, staphylococcus and streptococcus, and so we find many investigators injecting different kinds of vaccines with good success.

What are the actual facts?

I have had the privilege of treating many cases who had been injected in this country and in the United States for pyorrhœa, and I know what the results have been in those cases. It does not matter what micro-organism is used, if it be a pus-forming micro-organism and it is autogenous to the person on whom it is used, you are going to have the opsonic index of the blood raised at least temporarily and the flow of pus decreased or eliminated for the time—but it

is only for a time. Unless the dentist is willing and skilful enough to make the lesion surgically clean, the opsonic vaccines are not going to give you a cure, and if the dentist can successfully perform that operation, then his case will heal without vaccines.

The only contradiction which I know to this statement is one which I mentioned earlier in this discussion, when I referred to the revelations made by Dunlop's gas. Well, then, of what use are vaccines?

Many of you know I advise the vaccine treatment in connection with my work. Just at this particular point I want to spend a moment in eulogizing the work of Dr. Wright and of Dr. Ross. The accomplishments which I have observed of Dr. Wright are little short of miracles, and humanity owes a great debt to him and to the essayist of this evening.

Although perhaps when pus pockets have been formed deeply under the gum and in the alveolus, the leucocytes and the anti-bodies cannot reach and destroy the mixed infection there, the blood stream is able to absorb to a greater or less degree those pathogenic micro-organisms and carry them to all parts of the system, introducing disease and destruction wherever they go. This has been proven to be true. Again referring to Dr. Goadby, who is quoted by the essayist, Dr. Goadby has isolated from the pus pocket of a pyorrhœa case a micro-organism which he calls strepto bacillus malae, and by culturing that germ and injecting it into the joints of animals he has produced arthritis, and so it may be and has been shown that numerous maladies of the body are the result of mouth infections.

Now, when I have a severe case to treat, if a vaccine is used on the patient and the opsonic index is raised, the treatment becomes much more easy for me and I have more rapid results. However, it takes experience to know when to advise and greater experience to know how to administer vaccines for this disease. It is not an easy matter to administer vaccines, and those who are in the work greatly differ in their opinion regarding dosage, method, and desirable results. For instance, Goadby always has a reaction afterwards, Medalia reports a reaction, and in Dr. Allen's latest book on vaccines he expects both focal, local and systemic reactions. I will read you what he says:

"The signs of an adequate immunizing response are the production within twenty-four hours of slight malaise or



headache, increased tenderness and redness of the gums, and slight increase of any constitutional symptoms such as joint and muscle pains. These should all pass off within twelve to twenty-four hours. So long as any of these or an improvement in the local condition be secured, the dosage should not be increased."

Notwithstanding these facts, here is Dr. Wright, in our own city, using autogenous vaccines all the time and getting results which I would be surprised to know are exceeded in the world, and I think he will tell you he rarely, if ever, has reaction.

I have spoken very little of stock vaccines and their effects. I have treated many patients who have had injections of stock vaccines, and for pyorrhœa they seem to be comparatively efficacious.

Gentlemen, this subject is of such great importance to us and, in fact, to the whole human race, and it has been so splendidly put before us this evening, that I feel like apologizing for my discussion of the subject, but as it was impossible for me to see Dr. Ross' paper until the day before yesterday, you will excuse me if I have been more verbose and less concise than you would expect me to be.

Again expressing my appreciation of the privilege accorded me of listening to Dr. Ross, I thank you for the hearing.

DR. STUART WRIGHT.—Dr. Wright expressed his pleasure at the privilege of attending and taking part in the meeting of the Toronto Dental Society. He commended very heartily the taking advantage of any opportunity for the two sister professions meeting together to discuss subjects of vital interest to both.

He wished to discuss some phases of the subject as met with by him in the treatment of arthritis. The question was often asked whether pyorrhœa was the cause of the systemic condition or the systemic condition the cause of the pyorrhœa. This the audience could judge from the cases he desired to outline.

*Case 1.* Patient called in July. Had suffered from arthritis since previous Christmas. Caught cold easily. Spine and feet affected. Pains in back, hips and one knee. He looked upon all these conditions as a result of some infection. The spurs upon the feet had to be operated upon and removed. The case remained under observation a week or more. Saw nothing suspicious but a gold crown about which



the gum was considerably inflamed. Its removal was ordered. The patient objected, as it had, he said, given him no trouble. The dentist was dubious at first, but removed it and telephoned later that it was the filthiest tooth he had ever opened. The tooth itself was finally removed. Seven weeks later pains had all gone, the patient was at work and entirely better.

*Case 2.* Young woman, twenty-eight years old. A history of acute rheumatic attacks four years previous. Two years previous had had a severe attack with quinsy and had tonsils removed. Improved, but subject to recurrent attacks. When seen one foot was helpless and could not walk. Mouth examination revealed gums all diseased and severe pyorrhœa. Cultures were taken and vaccines made. Dr. McDonagh treated the case locally. Feet were treated, proper shoes obtained, and in ten weeks patient returned to work. The worst foot now quite flexible, and only slight soreness due to hypertrophy of synovial membrane, which will disappear.

*Case 3.* Woman, twenty-eight, recently called, suffering from arthritis. Molars and bicuspid gone to the gum line. The probable cause of the systemic condition was in the mouth. At any rate he would look no further until the mouth was treated.

Dr. Wright referred to the conditions at the Home for Incurables, where the majority of patients were suffering from arthritis. Of fifteen recently examined eleven had mouths so filthy that this condition *could* easily be the cause of the systemic trouble.

In flat foot cases under his observation the majority had pyorrhœa. With a system poisoned by the toxins of pyorrhœa there was a lack of tonic, and the muscles and ligaments must suffer.

A septic mouth was bound to affect the individual ultimately. It might be in the arteries, in the nerves, as in general neurasthesia and in other ways, as most of these conditions were due to the effect of some toxins upon the tissues of the body.

Dr. Wright also referred to the danger of a septic mouth in the administration of general anesthetics. "Ether Pneumonia" resulted in some cases from the inhalation of septic poisons from the mouth during anesthesia. Part of the preparation of the patient should consist of cleansing the

mouth. This is considered next in importance to the sterilization of operating instruments.

In closing Dr. Wright made a plea for the closer co-operation of the dentist and physician. The physician needed the dentist and he thought the dentist needed the physician. A better knowledge of each of the field of the other would improve the services of both to humanity.

DR. HAROLD CLARKSON.—Dr. Clarkson referred to a case of iritis referred by the oculist to the dentist. Some septic roots were removed and the iritis disappeared.

With reference to the case quoted by Dr. McDonagh where the extraction of the affected teeth did not result in the termination of the suppurative process, he said Goadby advised the use of vaccines before extraction to aid the healing process after the teeth affected by pyorrhœa were removed.

Dr. Thornton moved and Dr. A. E. Webster seconded a very hearty vote of thanks to the essayist, Dr. Ross, and to Dr. Wright.

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### *Teeth and Insanity.*

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**D**R. UPSON, writing in the *Pennsylvania Medical Journal*, describes teeth as being a source of pain, producing irritability, loss of sleep, incapacity for work and mental backwardness. An interesting case was cited where insanity was shown to be directly due to the condition of the patient's teeth. The patient, a young man, aged twenty-one years, was as a child bright, honest and truthful. At sixteen he went to work. Soon after began to commit robberies, highway robbery and other crimes, and was sent to a reformatory. At home his actions were peculiar; he was irritable at times, flighty and incoherent, and had periods of automatism. He would take the mattress off the bed and sleep on the springs. He was strong, well built and apparently healthy. Family history was good. Skiagraphic examinations showed badly impacted wisdom teeth, with abscesses at roots of two molars and one incisor. Removal of the impacted and abscessed teeth relieved the symptoms and finally effected a cure.

## *A Missionary Dentist's Experiences in China*

BY A. W. LINDSAY, D.D.S.

**F**IVE years ago last fall I left Toronto for Sze Chuan, West China, the mission field of the Canadian Methodist Church. I went to open a Dental Department in connection with the above missions.

We sailed from Vancouver, October 29th, 1907, and arrived in Chengtu on the 10th of March, 1908. Of this time we were actually on the road some ninety days, the remaining time being spent in the cities of Shanghai, Ichang, Chungking, and Kiating, buying supplies or hiring boats or sedan chairs, with their complement of men. In one instance we were the innocent victims of a plot among the boat captains to smuggle up the river a considerable quantity of contraband goods—wines, silks, sugar and firearms—stowed away most ingeniously among our belongings, which had been duly accounted for to the customs officers without the seeming necessity of a personal examination by them. The Chinese do not believe in Free Trade, even between provinces, and that causes a very great deal of attempted smuggling, and if under the powerful protection of the foreigner, so much the better. So, for ten days, we were detained at the customs' barrier until matters could be satisfactorily arranged.

To describe our journey over ocean, river and land would fill a separate and perhaps somewhat lengthy article. We passed through the mighty Rockies of our own Dominion, across the broad, and for us decidedly tempestuous, waters of the Northern Pacific Ocean; among the islands of Japan, with their rugged shores and mountainous interiors, catching glimpses of their temples, their beautiful lurid sunsets and snow-capped old Fuji in all his glory.

We spent some days in Shanghai, buying our pith sun-helmets, so necessary in the Orient; having our kharki and duck suits made by Chinese "foreign" tailors; making out and having filled the orders for our year's supply of flour, sugar, butter, soap, tinned milk and all those articles of food that one needs in a country where you can secure meat, a few rather tasteless vegetables, and only two kinds of

really edible fruit. Salt, pepper, spices, starch, coffee, cocoa, and even our tea, have to come from the coast, two thousand miles away, every year. We must also purchase a goodly supply of netting for our mosquito houses, under which we sleep from April until November. Shanghai, the commercial centre of China, is a European city, under the control of the several European nationalities having Consulates there. It is divided into several "Concessions"—French, German, British, and American being the largest, with a number of smaller ones adjoining these. Its wide streets, with large European buildings, street cars and carriages, electricity and gas, make it a very fairyland of wonders for the Chinese, whose conception of a large city means crowded, unsanitary, one-storey houses, dirty, narrow streets, foul-smelling and teeming with the masses of the employed and the unemployed, street vendors crying their wares, and the chair-carriers shoving and bumping their way through, regardless of the digs their chair poles are constantly giving the pedestrians; and last, but not by any means least, the pigs, hens and dogs that are forever, coolly and complacently, obstructing the traffic.

From Shanghai we travelled up the broad and placid Lower Yangtse; past Nanking, the ancient capital of China; the Grand Canal; the famous duck-shooting bays; Ganking, of pearl-inlay fame; Kiukiang, with its beautiful porcelains; arriving at length before Hankow, the city whose native part was totally destroyed by fire at the command of the Imperial forces during the late revolution. Directly across the river is Wuchang, where the Revolutionary army had their headquarters; and on the other bank of the Han River, a tributary of the Yangtse, (Hankow being on one side at the mouth), we find another large city, Hanyang, with vast iron industries, the hill at the back of which was the battleground of the opposing armies. Hankow is six hundred miles from the coast, and to this point the river is navigable for large steamers. For the next four hundred miles we travelled in a steamer of lighter draught, the river above Hankow in places being very wide and shallow. An interesting feature of the river along here is the ever-changing channel; the river bed is of sand, continually on the move. Not infrequently steamers run on sandbars which have formed in a single night. We saw a vessel on her way down stream that had become very firmly embedded on one of these shoals, and though we had no such accident, the captain had the engines stopped a number of times and the



launch lowered to make soundings ahead in the course. In due time we arrived at Ichang, the head of steam navigation, and deeply did we regret leaving Western methods of travel behind us.

After some days of bargaining, we hired native houseboats and stowed all our Lares and Penates away in their holds. The junk in which we travelled was about one hundred feet long and some ten feet wide. A larger part of this was occupied by the captain's family, and the boatmen, who, by means of bamboo ropes, pull the boat about all the way up the river, unless by chance we have a few favorable up-stream winds, making it possible to use the big oblong sail. The boats are very light-draught and flat-bottomed, well fitted for the navigation of the dangerous rapids of the Upper Yangtse. From Ichang we had a very pleasant, but certainly eventful, trip of thirty days, arriving at Chungking, the most westerly treaty port on the river, the 13th of January. After a few days' rest and a change of crew, we continued our journey, turning off the Yangtse, at Suifu, into the Min River, which is beautifully clear, in marked contrast to the muddy Yangtse. After six days of exciting travel on this rushing, swirling stream, we reached Kiating, transferring our goods here to still smaller boats, which were put in charge of Chinese Mission teachers. We hired sedan chairs and carriers, and after a four days' overland trip, reached Chengtu, the end of our long journey.

Chengtu is the capital of the Province of Sz Chuan, a city of half a million people, with well-paved streets, lighted at night ineffectually, it is true, but the theory is admirable, a regular scavenger system—a marvellous boon to any city in China, I can assure you—and a fine police force to keep law and order. The larger shops and compounds are lighted with electricity, and there are telephones between the official residences and the barracks. It is conceded to be the second finest native city in China, excelled by Peking alone.

Our first weeks here were occupied with watching the carpenters overhaul a Chinese house in which we were to live. They put down wooden floors in place of mud; tore out the latticed paper windows, replacing them with glass ones; hanging proper doors, and in many needed ways changing it to make it somewhat habitable. Even then I fear you would not appreciate having to live in it here in Canada. The walls were of woven bamboo, covered with mud and lime. The ceilings were of thin matting, in some rooms papered over. The building was one-storeyed and tile-roofed, so

that, in the hot weather, even in May, the thermometer in our sleeping room registered 90 degrees at midnight. Our greatest despair was rats. The whole place was infested with them. Many nights they made sleep impossible by their squealings and scamperings over the matting, which, being very dry, would crackle and groan with the weight of a dozen or so having an all-night game of tag, or some sport closely allied to it. It was marvellous what one small rat could devour in a night of clothes, curtains, books and such edible articles, and how very fond they seemed to be of running up the poles of our mosquito house and feasting on peanuts, sitting on the top of it, while we lay in bed and watched them, wearied of driving them away.

To this point our experiences were much the same as many others of our missionaries, but our ways now separated. Our Mission had a rule requiring every man to devote his first two years exclusively to study of the language. This requirement is strictly adhered to except under peculiar circumstances. I unfortunately got into the "peculiar" class, and had to study when I could keep the patients away. I found that there were several hundred foreigners, or, in other words, Europeans, in the province who had not had dental attention for from two to eight years. I need hardly tell you of their condition. But you can believe me when I say that my first year and a half were taken up with temporary fillings and treatments. It was as well that this was the kind of work that was required, for my chair, instruments and supplies, that were ordered before I left Canada, did not arrive for another year, having been all the time on the way. This occurrence taught me to have a good stock in hand, also to order well ahead of time. An order sent in June will reach me the next March. Small postal orders can be secured in from four to six months.

I had been at work but a short time when the Chinese officials and gentry heard about the work and wished attention. Although my work with the Europeans took up nearly all my time, I was able to see a few of the more needy cases. I found amongst these a number who had dentures which had been put in by Japanese and Chinese who had acquired a smattering of knowledge by working in the laboratories of American and European dentists in the coast cities. The dentures were very far from being perfect, and had in most cases been a serious aggravation. They looked quite satisfactory, but their utility was decidedly questionable. They were extremely grateful for a denture that was comfortable and useful. Slowly but surely, the work became known in

many parts of the province. Men came two and three weeks' journey, with all manner of troubles—cleft palate, hare lip, necrosis of the jaw, impacted molars, dentigerous cysts, tumors, and many others—even one gentleman requiring a nose. There are no native dentists worthy of the name; in fact they have no professional standing whatever in our part of the country, even among the Chinese. I have seen men who make it their business to extract teeth and to cure toothache by supposedly removing the "worm" from the aching member. This process is rather interesting. A worm is placed under the thumb of the operator (of course, without the knowledge of the patient), a probe is inserted in the mouth and manipulated around the offending tooth; then the "worm" is exhibited to the patient. It is quite realistic, I can assure; and effective, if the Christian Science methods of curing are of use. If there is further pain, then there certainly must be another bug; but sometimes it is not possible to remove the exact one, and then extraction is advised. This is done with a pair of forceps manufactured by the blacksmith, or the tooth may be knocked out. In difficult cases the roots will be split by a crude blow, thus facilitating the extraction.

As the time passed, the increased usefulness and growth of the Dental Department justified the Mission in making appropriations for a thoroughly convenient and commodious dental building. During the year of 1911 I built this and our own residence. The buildings are of grey brick, with red stone trimmings, and more comfortable and suitable could not be found anywhere.

Last year Dr. J. E. Thompson came into the Department, and we are still in very great need of another man to keep up with the demand.

Shortly after my return, we hope to prepare a dental course by translating our text-books used in Canada for the opening of the Dental Department in connection with the Medical Faculty of the Union University of West China.

I believe that the Chinese will be second to none as operators. They are most clever with their fingers; the work that the average man can turn out with the crudest of instruments is nothing short of wonderful.

I trust that in a few years we may have some interesting information to send to you in Canada from this new field of dental work. There seem, as we look ahead, to be no limit to the opportunities that lie before us in that vast Empire, so rapidly awakening to Western life and thought.

## SOCIETY ANNOUNCEMENTS

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### ***Thirty-Sixth Annual Meeting of the Eastern Ontario Dental Association, Wednesday, Thursday, and Friday, April 30th, and May 1st and 2nd, 1913, at Ottawa***

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**W**EDNESDAY, 8 p.m.—Welcome to delegates. Reading minutes of last meeting. Financial statement. Appointment of auditors. Unfinished business. Reports of Committees. Enrollment of new members and collection of dues. Election of officers. New business. Notices of motion.

PRESIDENT'S ADDRESS by Dr. Morrow. Discussion opened by Dr. W. R. Greene.

Thursday, 9.30 a.m.—

*Paper:* "Bismuth Sub-nitrate and Parafine as a Root Canal Filling and a Clinic to Demonstrate the Method." By Dr. H. Winters. Discussion opened by Dr. W. B. Cavanagh of Cornwall.

*Paper:* "Vaccination and School Children's Teeth," by Dr. F. A. Aykroyd of Kingston. Discussion opened by Dr. R. E. Sparks of Kingston.

*Reports of Committees and General Business.*

Thursday, 2.30 p.m.—

*Paper:* "Plea for Treatment of Pyorrhœa Alveolaris by Vaccination," by Dr. Laidlaw. Discussion opened by Dr. R. J. Reade of Toronto.

*Paper:* "Orthodontia From a General Practitioner's Standpoint," by Dr. Bradley of Richmond. Discussion opened by Dr. L. E. Stanley of Ottawa.

Dr. McElhinney will give report of work of Oral Hygiene Committee and of public school inspection in Ottawa. Thursday, 8 p.m.

*Paper:* "Evolution of Public Health in Ontario," by Dr. McCullough of Toronto, Ontario Health Officer.

Friday, 9.30 a.m.—

Clinics:

1. Dr. Bradley, Anatomical Articulation, Using the Face Bow.



2. Dr. Richardson, Replacing Lost Central, Using Carmichael Attachment.
3. Dr. R. H. Cosgrove, Seamless Crowns.
4. Dr. W. R. Greene, Selected.
5. Dr. McIntyre, Practical Method of Overcoming Difficulties of Taking Impressions in Mouths, Edentulous, with Little or No Ridge and Getting Best Results.
6. Dr. W. B. Cavanagh, Cornwall, Selected.
7. Dr. O. Martin, Mixing Silicate Cements for Shades and Best Methods to Secure Lasting Results.
8. Dr. Leggo, Jiffy Cement Tubes.
9. Dr. H. L. Watt, Method of Mixing Plaster of Paris.

*Paper:* Amalgam Fillings, by Dr. R. J. Reade. Discussion opened by Dr. Cross.

*Paper:* Use of Medicaments in the Immediate Extirpation of Pulps, by Dr. R. E. Sparks, Kingston. Discussion opened by Dr. Liddle of Ottawa.

Friday Evening—

Entertainment of the delegates by the Ottawa dentists.

Dr. Nolin of Montreal is expected to give a paper on crown and bridge work.

### ***The Vancouver Dental Society.***

**T**HE Vancouver Dental Society held its annual banquet on Saturday evening, February 15th, 1913, at the Hotel Elysium.

Dr. J. Milton Jones, President of the Society, acted as toastmaster for a list of interesting and much appreciated speakers. This banquet was the closing feature of a day's programme which attracted to the city a very large percentage of the dentists of the province. A very profitable morning session was given to clinics conducted by Drs. Edgers and Ballou of Seattle and by the following B. C. men: Drs. F. H. O'Neil, E. W. Bridgman, H. T. Minogue, E. H. Crawford, W. F. Wright, J. E. Black and O. N. Leslie.

Much interest was taken in Dr. Edger's demonstration of nitrous-oxide and oxygen for painless operating. Many obtained the very desirable personal knowledge of the relief afforded by this method by undergoing a slight operation upon themselves while under the influence of the gas.

A business session of the Provincial Board in the afternoon completed a day that was quite satisfying to the executive and officers of this growing society.

R. C. BAMEFORD, *Secretary*

## ORAL HEALTH.

EDITOR — — WALLACE SECCOMBE, D.D.S., TORONTO, ONT.

ASSOCIATE EDITOR — W. H. DOHERTY, D.D.S., TORONTO, ONT.

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WEST CHINA

A Monthly Journal devoted to the furtherance of individual and community health by the advancement of Dental Science and Oral Hygiene.

Published in the hope that it may reach those with an open mind, a willing heart and a ready hand to serve.

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Vol. 3

TORONTO, MAY, 1913.

NO. 5

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## EDITORIAL.

### *A Call to the Dentists of Ontario.*

THE burden of supplying more dentists in Canada in the next ten years rests upon the older provinces of the Dominion, but upon none more than upon the Province of Ontario. Ontario's population, wealth and geographical position combine in placing the greater share of the burden upon the shoulders of Ontario.

It cannot be urged that sufficient men are not taking the preliminary educational work demanded of matriculants by the Royal College of Dental Surgeons. During the year 1912, in the Province of Ontario, 6,596 students took Normal and University matriculation work, and of this number 4,236 received diplomas. Two hundred and ninety-eight were honor matriculants and 103 scholarship candidates. When it is considered that in a freshman class of 60 of the R. C. D. S. 50 are Ontario men, and when this number is compared with the 4,236 High School students in the Province who last year completed the preliminary educational work demanded of dental matriculants, it must be admitted

that, whatever the cause, it is not a matter of the matriculation standard that deters Ontario young men from entering the dental profession.

Two things are needed:

First—Such a campaign of education in our High Schools as will present to our young men the claims of modern dental practice as a suitable and worthy lifework.

Second—The encouragement and active assistance in this matter of the individual dental practitioner.

We hesitate to prophesy, yet cannot resist making the prediction that inside two years oral hygiene committees of the profession will not confine their effort to public instruction, but will of necessity be compelled to take means for the encouragement of suitable young men to enter the ranks of the dental profession. Otherwise the work of oral hygiene committees will have to be curtailed owing to the lack of operators to take up the institutional, public school and other work being urged by these committees.

The man who enters college in the fall of 1913 will not be a factor in relieving conditions until the summer of 1916.

The problem must be met at once. As a member of the profession will you quietly help with a little missionary work among your friends? Go after the best and brainiest men, as these are needed to help solve, among other problems, that of susceptibility and immunity to dental caries.

The dental profession is worthy of the best. All such should be encouraged, while unsuitable or unworthy candidates ought to be discouraged from entering the profession.

### *Sterilization of Dental Instruments.*

THE monthly bulletin of the St. Louis Health Department refers to a lack of aseptic precautions in certain dental offices and of the possible spread of tuberculosis occasioned thereby. The bulletin continues:

“Many dentists are deplorably lax in the manner in which they use their instruments, and often observe no care at all in the possible transmission of diseased conditions. When we consider that almost every disease transmissible from one person to another is most readily transmitted through the medium of the air passages, it can be seen easily how important the cleanliness of the dental instrument is.

“It is not enough that dental instruments should be wiped, for wiping does not remove all infection. Such instruments should be immersed in boiling water after the

work on each patient is completed. Dental cleanliness cannot well be forced by the Health Department, but public aid is necessary."

The bulletin asks that all dental patients insist that only carefully sterilized instruments be used on their teeth and gums, and that cases where such precautions are not taken be reported.

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### *Oral Hygiene Reports.*

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#### *Ottawa, Ont.*

Permission has been given the Ottawa Dental Society to make dental inspection of the public school children. A start is to be made with the pupils of the Elgin Street School.

#### *Homer, La.*

A medical and dental examination of the school children attending the High School of Homer was recently completed.

As the result of statistics gathered, Superintendent of Education Harris has stated that there are 2,500,000 decayed teeth in the mouths of the public school children of Louisiana; 480,000 children have defective eyesight, 210,000 have defective hearing, 125,000 affected with nasal trouble, and 160,000 have diseased throats.

Dr. Harris in his report suggests that it would be an economy for the State to see that the school children are sound and healthy, as a healthy child can finish the school course a year or two ahead of diseased children, and lays down the principle that an educated mind should be housed in a sound, healthy, vigorous body.

#### *St. Louis, Mo.*

The authorities in St. Louis are advocating the establishment of a free dental clinic for the poor, and complain that their present system of voluntary dental service is entirely inadequate to meet the demands of the situation. In this connection the following paragraphs taken from a quarterly report just issued are of much interest:

"Out of 2,378 children found with bad teeth, only 138 received dental treatment, though 479 were given 'emer-



gency treatment' in the schoolrooms. Adding these two figures, we find that 1,760 children with bad teeth received no treatment. And yet it remains a fact that bad teeth are a handicap in obtaining an education, and that skilled dental treatment has resulted in improving the standard of education nearly a hundred per cent.

"As long as the schools must depend upon the services of a few dental students, although those services are free, the majority of children suffering from bad teeth will get no relief. This means that they will be kept back in their studies, and, in many cases, fail to graduate. With teeth properly treated, the standard of graduation would be raised all over the city, but especially in the crowded downtown districts.

"The free dental clinic is the only solution of this problem. It is as necessary as the free hospital. It would quickly pay for itself in the results above indicated."  
*Moline, Ill.*

Dr. B. J. Cigrand, in a public address recently, declared that in the United States "one thousand children die every day whose death may be traced back to defective teeth or digestive disorders."

"It is estimated by the government," said Dr. Cigrand, "that at present there are 4,000,000 school children affected with tuberculosis. More than 65 per cent. of the school children have decayed teeth and here lurks the germ of tuberculosis, because the heat, the natural moisture and shelter of a decayed tooth makes a splendid temporary home for this destroyer.

"The bad tooth has an indirect influence in bringing on tuberculosis."  
*Fargo, N.D.*

Dr. F. A. Bricker gave an address at the Y. M. C. A. on the subject of "The Teeth and Their Relation to Health."  
*Toronto, Ont.*

A committee of the Ontario Dental Society recently waited on the Provincial Secretary, Hon. W. J. Hanna, asking that the Government appropriate sufficient funds to employ a dental surgeon to visit the hospitals of the insane and other public reformatories, for the purpose of giving the teeth of the patients systematic and careful attention. Mr. Hanna promised the delegation that the matter would receive his careful attention.

## The Far-off Fields.

"How often we flatter ourselves with the delusion that we would be much better if we were only somewhere else, and that we would do much better if some other tasks were ours. The place someone else is filling, the work that someone else is doing looks easy and comfortable compared with our own. But if we would only stop to think one minute we would know that it is distance that makes the difference."



Frank E. Bennett D.S., D.S.S. St. Thomas  
Chairman Oral Hygiene Committee  
Secy. Treas. Egan Dental Society



W.C. Davy D.S., D.S.S. Norribury  
Presdt. Ontario Dental Society  
Vice-Pres. Board of Directors  
R.C.D.S.

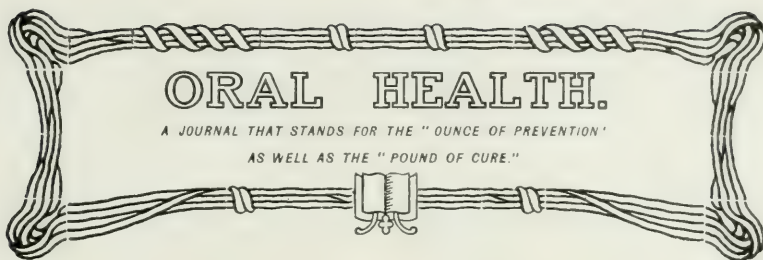


W.E. Willmott D.S., D.S.S. Toronto  
Presdt. Toronto Dental Society



W.C. Macartney D.S., D.S.S. Ottawa  
Presdt. Eastern Ontario  
Dental Society

# CANADIAN DENTAL SOCIETY OFFICERS



VOL. 3.

TORONTO, JUNE, 1913

No. 6

### *Pickerill's Book on Dental Caries.\**

A REVIEW.

BY H. S. RAPER, D.Sc., M.B., Ch.B.,  
Department of Physiological Chemistry, Royal College  
of Dental Surgeons, Toronto.

THE Royal College of Surgeons of England is to be congratulated on its award of the Cartwright Prize to an essay which without doubt will always be one of the classics in the literature of dental science. The essay has now been published in book form and is, therefore, accessible to every dentist. It is a book which no one interested in the movement for preventive dentistry can afford to neglect, and it certainly ought to be in the hands of every graduating dental student.

The book opens with a historical review of the means used to prevent dental caries from the earliest times to the present days, and the remarkable conclusion is reached that practically no progress in this direction has been made. Speaking of the pamphlet on the preservation of the teeth issued by the British Dental Association (1905), Pickerill says: "Can it possibly be claimed that these measures differ in any fundamental principle from those which have been in the main practised ever since the decay of the teeth has been treated by civilized man? Compare the teaching of the nineteenth and twentieth centuries with that of the fifteenth and it will be seen to be almost identical, differing

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\*Prevention of Dental Caries and Oral Sepsis. By H. P. Pickerill. Bailliere, Tindall & Cox.



only in one respect—the advocacy of “active mastication.” *A priori* it would seem that the treatment was radically wrong; that the judgment of time and experience condemned it; and that such measures have proved futile to arrest the progress of what has become the most prevalent disease of civilized communities.”

Starting out from this point of view, Pickerill has made a large number of original investigations on the means of natural and artificial protection against dental caries. This has involved a study of the structure and properties of the enamel surface, and the composition of the oral secretions under the influence of various factors. From the results of these investigations a method of prophylactic treatment has been devised which appears to be quite rational and easy to carry out.

In reviewing such a work as this, of which every chapter abounds in interesting reading, it is not easy to pick and choose one part in preference to another as being the most important. Perhaps what strikes one most forcibly in considering the results as a whole is the general support given by many of the results obtained to old-established clinical observations, such as, for instance, the undoubted difference in the “hardness” of the teeth and the influence of viscosity of the saliva or immunity to dental caries. The author rightly says: “It has become somewhat unfashionable of recent years to admit the accuracy of clinical experience when it stood alone. . . . But are we right in discarding such observations simply because they are not supported by the readings of a mechanical scientific instrument? Are not the eyes, hands and brains of men long trained to their special work and fitted by years of observation, scientific instruments of extreme delicacy? True, the personal equation is a factor to be reckoned with, but when the average of a large number of such observations is all in one direction we cannot do otherwise than accept the conclusions.”

With regard to the relative “hardness” of teeth, many who have thought about the question must have come to the conclusion that Black’s method of testing this property by resistance to crushing strain was hardly likely to bring out such differences in “hardness” did they exist. The methods used by Pickerill in measuring this quality of the enamel by determinations of the permeability to silver nitrate, the density by measuring the mercury displacement, and the

hardness by the "scratching" method of geologists, all bring out differences in the properties of the enamel of "native," "sclerotic" "malacotic" teeth, and the differences are always in favor of the native and again the malacotic teeth.

The investigations on saliva are the most complete yet published. Not only has the total saliva been investigated, but also, for the first time in the case of man, the parotid saliva has been collected separately and concurrently with that from the sublingual and submaxillary glands and a comparison instituted.

There can be little doubt at the present day that the composition of the oral secretions has a very decided influence both on the inception of dental caries and the acuteness of its course. But it is just as certain that other factors, such as the resistance of the enamel surface and the shape and degree of development of the jaws and teeth are also of great importance. If we accept Pickerill's conclusions, then all these factors in the causation of the disease may be due in the last analysis to unphysiological use of the mouth and improper choice of food, especially in early life. An exception to this statement must be made, however, and that is because the factors introduced by heredity are not included. These are not easy to define, but, excluding the apparent cause of overcrowding of the teeth due to inheritance of the large teeth of one parent and the small jaws of another, there remains still that indefinite variation in different individuals which we call "diathesis." That this may have a physical basis can hardly be doubted. Any one man is similar in general make-up to the rest of his species, but when his smaller and more detailed characteristics are considered it is at once apparent that there are many differences between all of us. A few of these, for example, are differences in size and shape of head, in the amount and color of the hair, or in smoothness or roughness of the skin. Man may thus be subdivided into large-headed and small-headed, dark or fair, rough-skinned or smooth-skinned, and so forth. These differences are all external and apparent to the eye, and it does not seem unreasonable to suppose that in the same way there are small differences in the make-up of internal structures which lead to slight differences in function. For example, such minute divergence in structure in the brains of two individuals might thus account for differences in "temperament," and this, of course,

is largely influenced by heredity. In the same way we may apply this reasoning in considering the function of the salivary glands and account for small differences in their behaviour in different individuals. These might manifest themselves by a more copious secretion or variations in the amounts of one or more of the constituents of the saliva.

Assuming such a physical explanation for "diathesis," it becomes possible to explain why persons relatively immune to dental caries are by no means immune to pyorrhea alveolaris and why individuals susceptible to caries are relatively little subject to pyorrhea. The difference may be traced back to the ease with which deposits of tartar accumulate, which again depends probably upon the composition of the saliva. The composition of the saliva may thus be dependent on hereditary influences, and so to that extent will susceptibility to dental caries be dependent on heredity. If such inherited tendencies would not be influenced or moulded by diet, exercise and special training in the early period of our development, then the appeal of those preaching preventive dentistry would be a vain one. The great merit of Pickerill's work is that he has outlined a course of treatment, or, to put it more exactly, a "mode of life," by which even those "born to have caries" may have hopes of successfully combating its ravages.

That caries begins by the lodgement of carbohydrate food on the teeth, and the the forms of carbohydrate food we utilize nowadays are too finely prepared, are incontrovertible facts. We *must* take carbohydrate food, however, and the difficulty is to find that form of this class of food which will be least likely to stick to the teeth and give rise to acid production later. Pickerill has attempted to solve this problem by a series of experiments in which carbohydrate prepared in various forms was eaten in the usual way. A few minutes later the mouth was cleaned with distilled water and a tooth brush and the debris collected and incubated. The acid produced by incubation for twenty-four hours was then estimated. It was found that chocolate, biscuit, pastry, cake and "brown" bread all caused the greatest acid production. White bread gave a little less, and cane sugar, bread and honey less still. Amongst the foods which gave no acid reaction after incubating were potato, lemon, parsnip, pineapple, banana, apple and nuts. These latter, then, are foods containing carbohydrate that can be eaten without fear of acid-producing residues being



left adhering to the teeth. The first list of acid-producing foods contains, however, many staple articles of diet, and it is difficult to see how they could be eliminated from the diet of most of us without serious consequences. Bread, for instance, will probably always be eaten, caries or no caries. This difficulty has been overcome by Pickerill as the result of a study of the alkalinity of the saliva after various substances had been eaten. In this series of experiments it was shown that acid substances such as orange, lemon or apples, produced a rapid flow of alkaline saliva of several times the neutralizing and cleansing efficiency of ordinary resting saliva. Pickerill then tried the effect of eating one of the foods with a high acid-producing potential, such, for instance, as white bread, followed by one of the foods from which no acid was obtained on incubation. In this way, bread and butter followed by apple or orange gave no acid production when the debris removed by a tooth brush was incubated. Similarly, chocolate or cake followed by orange gave an alkaline and not an acid reaction on incubation of the debris remaining on the teeth. The solution then of the problem of taking the necessary carbohydrate for purposes of nutrition, in the form of bread, for example, and rendering it harmless from the point of view of producing caries, is *never to eat it as the last portion of a meal*, and to follow it always by some acid or acid sweet substance, of which fruit is probably the best.

With regard to the vexed question of the influence of sulphocyanides on dental caries, Pickerill is not so positive in his assertions as some others have been. "On the whole we may conclude that, whilst undoubtedly sulphocyanide of potassium is a beneficial element in saliva and one making for freedom from disease, yet it cannot be regarded as the most important or only factor in producing a natural immunity to dental caries or oral sepsis." This has also been the writer's experience in examining the saliva of students at the Royal College of Dental Surgeons, Toronto. Whereas very few students have been found absolutely immune to caries, and in these the sulphocyanide content was normal, many have been found quite susceptible and with saliva containing much more sulphocyanide than normal. Almost universally is this the case with students who smoke, so that one of the origins of sulphocyanide in saliva is to be attributed to the detoxication by conversion into potassium sulphocyanide of traces of cyanogen compounds inhaled with the smoke.



In considering the subject of dentifrices Pickerill takes an absolutely new and independent course and wholly condemns alkaline mouth washes or dentifrices containing chalk because they are salivary depressants. Conversely, he advocates the use of acid substances since they immediately produce a flushing of the mouth with a highly alkaline saliva, a condition which also lasts for some time afterwards. As the most suitable substance to use, acid potassium tartrate (cream of tartar) is suggested. A solution of this may be made more agreeable by the addition of saccharine. That this and salt will not injure the teeth was demonstrated by scrubbing teeth daily in the laboratory for a period of six months with a saturated solution of the salt without the slightest sign of any decalcification. A series of four prescriptions for mouth washes is given, in which acid potassium tartrate is incorporated with other ingredients. One advantage of such mouth washes is that children take kindly to the use of them.

The reduction of the amount of fermentable carbohydrate in the mouth by inoculating organisms (yeast was used) which destroy it more rapidly than the lactic acid-producing bacteria, was also tried by Pickerill with encouraging results. The form of yeast used was *sacchromyces coagulatus*, which breaks up glucose ten times more rapidly than the mouth organisms, the glucose, of course, being converted into alcohol and carbon dioxide, which do not attack the teeth. This is a new field for work and, as Pickerill states, when more is known about it a valuable asset in the preventive treatment of dental caries may be obtained.

The concluding chapters of this excellent book deal with educational and legislative methods for dealing with dental caries. Though somewhat too drastic for the popular taste, it is proposed to tax most of the starchy and sugary foods classed as "fine confectionery" high enough to prevent their consumption—they have the merit of cutting directly at the roots of the sinister but luxuriant growth which characterizes dental caries to-day.

The educational measures are to be highly commended, and comprise short courses of lectures to teachers in training colleges, direct teaching of the children in schools, and, in addition, some sort of instruction at schools of household science in the cause and prevention of dental caries in so far as dietetics are concerned.

The great thing about this work of Dr. Pickerill's is

that it provides a reasonable basis for clinical work on the prevention of dental caries, and there can now be no excuse that no definite, workable scheme exists. There is an abundant basis of experimental work in this essay for years of accurate clinical investigation on the subjects that are discussed in it. All that is needed is a number of dentists sufficiently interested in the work to put it to the test. Some classification of cases with regard to their relative immunity might be attempted, and might be based on the percentage incidence of caries in the whole number of teeth of each individual. When thus classified, enquiry might be directed into dietetic habits, relative development of jaws and teeth and spacing of the teeth, chemical examination of the saliva as regards its alkalinity, the amount of sulphocyanides present and its content in ptyalin. By careful observations collected from a large number of cases a basis might then be found for appropriate extra treatment in addition to the prevalent operative measures.

It is by this or some such method that the way may be prepared for a sane and hopeful outlook on the possibilities of preventive dentistry.

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### *The Brodie Memorial.*

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THE following additional subscriptions have been received by the Treasurer of the Brodie Memorial Fund:

Dr. A. E. Webster .....	\$5.00
Dr. H. E. Eaton .....	3.00
Dr. Wallace Seecombe .....	3.00
Dr. C. A. Kennedy .....	1.00

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\$12.00

The Ontario Dental Society at its recent meeting decided to close the subscription list and voted the balance required to complete payment of the memorial portrait. The painting has been hung in the rotunda of the Dental College building, Toronto.

## *Our Attitude toward Porcelain.*

By J. W. CORAM, D.D.S., PROFESSOR OF DENTAL CERAMICS,  
ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO.

**A** REVIEW of dental literature for the past few years impresses one with the changes in the science and practice of dentistry, and particularly the improvements made in the manner of restoring lost tooth tissue with the end in view of bringing about a natural appearance and permanent result, with as little strain as possible to operator and patient. That porcelain has played a very prominent part in attaining this result is evident from the amount of time and space devoted to its discussion, and if anyone is unfamiliar with the peculiarities and difficulties to be overcome in its use, it is certainly not due to a lack of information volunteered. Porcelain has been criticized by some and defended by others according to the success each has had in its use. Why there should be such a difference of opinion about a material which has been used so long is a matter of interest.

In the beginning of the porcelain era it was almost universally acclaimed as an ideal filling destined to displace gold—at least in those locations where the æsthetic advantage was a factor. But we find that, while at first it aroused such enthusiasm, in time many began to doubt its merits and reverted to the use of gold. Whether this was due to the material itself or to the judgment with which it was used is a question the solution of which would help to decide why we have had such indifferent success with it.

To say that any material is absolutely the best filling for every cavity would be foolish, but it is a fact nevertheless that many operators became so enthusiastic about porcelain that to them there was no limit to its possibilities. This was the first great reason for failure in the hands of many porcelain workers and their subsequent return to something they considered more reliable. While good results are obtained from its use, it demands a great deal from us, and unless we are willing to meet the requirements we cannot expect anything but failure. It is necessary to have a knowledge of its weaknesses and peculiarities and then judgment enough to know where it should be used.

The correct principles of cavity preparation for the reception of porcelain inlays must be understood and carried out. And, lastly, the operator must have scruples enough to prevent him from inserting an ill-fitting inlay and trusting to cement and contact to hold it in place. It is to some or all of the above reasons that the great majority of failures in porcelain inlays are due, and not to the material itself, which, however, has been made to suffer. This must be so, else why do some succeed in its use where others fail, all having at hand the same conveniences in the way of furnace and bodies?

We know what are the essentials of an ideal filling material, and among the more important are:

1. Ability to resist stress of mastication.
2. Toleration of tooth tissue.
3. Non-conductor of heat, cold and electricity.
4. Resemblance to tooth color.
5. Edge strength.

And another might be mentioned, ease of insertion to patient and operator.

There is no filling possessing all these qualities (which vary in importance according to the location of cavity), but no filling possesses more of them than does porcelain, and, where indicated, it has enough of them to make it preferable to any other filling material.

Considering its advantages, we have:

1. Possibility to match the color of the tooth so well that in ordinary conversation it will pass unnoticed.

2. Perfect non-conductor of heat and cold, rendering it possible to place it in very deep cavities without any danger of affecting the pulp.

3. The soft tissues take more kindly to it than any other filling, indicating its use specially where there are evidences of recession of gum tissue.

4. The loss of tooth tissue in preparation of cavity is reduced to the minimum.

5. The additional support of cement gives added strength to the remaining tooth.

6. Patient need not be subjected to any inconvenience of dam, clamp, malleting, etc.

In spite of so many advantages possessed by porcelain, the proportion of operators using it grows less and less



each year, and yet, at the same time, we are assuring ourselves of our constantly improving methods of filling teeth. Not only are a great many older practitioners dropping it, but the more recent graduates seem very loath to use it. Time necessary for construction and difficulty in obtaining an adequate fee are arguments used by many in condemning its use, but from the standpoint of the patient the extra expense is very seldom an issue where the advantages are shown to them.

The question of permanency has also been often urged as an objection. But this is only a matter of comparison with other fillings under the same conditions, and that comparison is always with gold. A well-fitted porcelain inlay in a properly prepared cavity (where it is not contra-indicated), is not less permanent than gold, as is amply shown in the experience of many porcelain workers.

We cannot but arrive at the conclusion that there is too much trouble involved in its construction to recommend itself to the average dentist. Are the demands of porcelain, then, in the matter of technical and artistic ability, too much to be expected of us, or do we lack the application and energy to become proficient in its use?

We might arrive at this conclusion when we consider with what satisfaction the introduction of silicates was welcomed. How fortunate it was for the manufacturers that they were able to place silicates on the market at this particular time. How easy it was for them to persuade the profession that it would satisfy all their claims. And it is safe to say some dentists are expecting more of it than even the manufacturers ever did. The weak points of porcelain are emphasized in silicate. Besides, it is an excellent conductor of thermal changes and does not maintain, as does porcelain, that smooth contact, which is of so much importance, where contours are restored. It does not limit the field of porcelain to any great extent, and it is inviting failure to expect it to do so.

It is not the object of this article to discuss the indications for the use of porcelain inlays—a part of the subject familiar to all—but to protest that there is not the dental advancement we read so much about, in this department at least, when we discard a material which has so well stood the test of years in favor of something which either shows disregard for aesthetic appearance or from which we can only *hope* for favorable results.

## ***Painless Dentistry.***

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BY EDGAR W. PAUL, D.D.S., INSTRUCTOR IN ANAESTHESIA AND  
EXTRACTION, ROYAL COLLEGE OF DENTAL SURGEONS  
OF ONTARIO.

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**F**EELING is a sense. Feeling pain is nonsense." From observation and study and trying to keep in touch with the advancement made in connection with the elimination of pain in general and dental surgery in particular, I believe the above motto will be very soon accepted literally by the general public. The term "painless dentistry" has always had a bad sound in the ear of the ethical dentist on account of the association of this phrase with the advertising parlors, the owners of which were astute and far-seeing enough to know that that was what the public was looking for. Many prosperous and intellectual people found their way into these offices in the vain search for freedom from the dreaded pain usually associated with the practise of dentistry.

My opinion is that the dentist of the future must be prepared to practise painless dentistry or nearly so. In fact, I have been informed by a prominent dentist of a leading city of the United States that the dentist of his city who does not practise painless dentistry does not get very much dentistry to do.

A large percentage of the people postpone and neglect having needed dental operations performed on account of the universal dread of the pain often associated with certain classes of work. Should this fearful attitude of the public be overcome by improved methods and the adoption of means to eliminate the pain, the dental profession would be unable to cope with the increased demand for dental services. Besides (and I speak from personal knowledge) most people very willingly pay a much larger fee if the operation can be performed without pain.

When the term "painless dentistry" has hitherto been used, it was usually understood to refer to the extraction of teeth. Now it applies to the whole practise of dentistry, and

as I have already intimated our patients will soon appreciate this fact and demand the practise of the same. To my mind, the general surgeon would be as much justified in confining the use of anaesthetics to major operations and performing minor surgery, such as removal of adenoids and tonsils, without anaesthetics as is the dentist in practising many operations in connection with the preservation or restoration of the teeth without attempting to reduce or remove the pain.

All general anaesthetics, such as chloroform, ether, somnoform, nitrous oxide, with air or oxygen, have both their analgesic and anaesthetic stages. The former state, known as analgesia, is marked by freedom from pain while the patient remains sufficiently conscious to obey instructions and talk, even the sense of touch not being lost. Dr. Hewitt, of Chicago, used chloroform in the analgesic stage for fifty years for the performance of all operations in dentistry. The writer has a most pleasant recollection of an extended interview with Dr. Hewitt in Chicago a few years ago.

It is this state of analgesia that may be taken advantage of in the practise of painless dentistry, although for certain dental operations, such as extractions and removal of pulps, the patient has to be carried to the anaesthetic stage. The anaesthetics most used and recommended are nitrous oxide either mixed with air or oxygen or both, and somnoform. The former is no doubt much more reliable and satisfactory, and many very fine apparatus are being manufactured for its use—the most satisfactory among these being the Clark and the Teter. Dr. DeFord has a very satisfactory apparatus for administering somnoform. Of course, the nasal inhaler is used in the administration of either of these anaesthetics, and the administration is continued while the operation is being performed. It is not possible or expedient in an article of this length to go into details regarding the technique of the administration with the different apparatus. Suffice to say that excellent results may be secured by their use and, while every case may not be as ideal as one would wish, yet, in most cases, the results warrant their use.

Regarding the use of nitrous oxide and oxygen as an anaesthetic by the nasal inhaler for the extraction of teeth, it is certainly wonderful what can be accomplished with scarcely ever a failure, and we use this anaesthetic in this way now in every case which seems to present any unusual difficulty.

For fear that it might be assumed from this article that the only way to eliminate pain during dental operations is by the use of general anaesthetics, I wish to say a word about what may be accomplished by the judicious use of local anaesthetics. Since Novocain has been introduced to the dental profession, those dentists who had such alarming experiences with cocaine as to discontinue its use can be assured that they now have an anaesthetic which is efficient in every detail and possesses practically no toxic elements. All extractions with the exception of inflamed or abscessed teeth may be accomplished without any pain. Special care, of course, must be exercised in the preparation and injection of the anaesthetic to avoid this part of the operation being painful. For the removal of pulps, the preparation of sensitive cavities, the amputation of roots, the removal of bone or the removal of growths on the gum tissue, the thorough injection of the anaesthetic around the tooth as you would if you intended to extract the tooth (being careful to force the solution well toward the apices of the roots) will render any of the above operations absolutely painless.

In conclusion, let me point out that no one has a monopoly on the materials and methods that may be used, and one of the chief reasons why more effort is not made to reduce the pain is indifference or carelessness on the part of the operator. Invariably, especially at the present time, the dentist who has the most desirable class of practice is the one who has established a reputation for careful, gentle and sympathetic treatment of his patients. Patients often cannot distinguish between good and inferior work on the part of the operator, but they all can appreciate the suffering or the absence of the same in the performance of the different operations. If you wish your patients to speak well of you do not cause them unnecessary pain.

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### *Need for Medical Inspection.*

HERE is a serious significance in the report on dental inspection given to the Guelph Board of Education by Dr. Douglas Foster. The most startling results of that inspection reveal the fact that out of the 468 children examined in St. Patrick's, St. George's and St. John's Schools no less than ninety-three per cent. of them were in need of dental treatment, and amongst these many of the



children had lost permanent teeth. That is, they had, owing to the fact that they were not dentally treated at the opportune time when the teeth might have been saved, lost that which can never be replaced except artificially.

Such defects as are revealed means a great deal to the future of the rising generation. No one needs to be told in this day and generation that lack of wholesome teeth means an impairment of the physical development of the child, for, following in the train of bad teeth means a host of ailments, of which malnutrition is foremost.

We need not here stop to wonder why it is that only seven per cent. of the 468 children examined had good teeth; there are various causes to account for this state of things. Inattention to keeping the teeth clean and sweet by the use of the tooth brush has no doubt considerable to do with it. The fact remains that a dental inspection of only a small percentage of the pupils attending the public schools reveals that at a very early age in life—just when they should be most healthy and their teeth in best condition—our children start out handicapped with bad teeth, some gone beyond hope of redemption.

Nor is this all. Dental inspection has revealed many cases of enlarged tonsils and adenoids, which are possibly more serious in their effects upon child life than defective teeth. Many of the other physical drawbacks children are suffering from might be revealed by a medical inspection, of which defective eyesight is not the least.

While parents ponder over the facts revealed in Dr. Foster's report they must be led to wonder that children get along as well as they do, for bad teeth, adenoids and enlarged tonsils are all handicaps to intellectual as well as physical development.

The Herald agrees strongly with the suggestion that the time has come for some form of medical inspection in the public schools, with special attention to the children in the junior grades. If a child is started free from physical defects as far as it is possible to do so it is an easier matter to keep him or her on the right path. On the other hand, a child starting out with permanent teeth irrevocably lost, troubled with its tonsils and adenoids, gets a poor start, which often leads to permanent handicap. These and other physical impairments are not always apparent to parents, who would be the last to wish to see their little ones suffer.

So we say that the time has come for the Board of Education to commence some system of inspection, by the establishment of a school nurse or otherwise as may be deemed wisest. It will cost money, but in the end the gain is beyond monetary calculation.—Editorial, *Guelph Daily Herald*.

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### ***Free Dental Clinics, State of New Jersey.***

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**I**T has been enacted by the Senate and General Assembly of the State of New Jersey:

1. Whenever any dental association regularly incorporated under the laws of this State shall maintain and conduct in any city of this State a dental clinic or clinics where indigent children may receive treatment and relief without charge or fee therefor, it shall be lawful for the board or body having control of the finances of such city to appropriate and pay to such association, each year, such sum or sums, not exceeding in all the sum of ten thousand dollars (\$10,000), as it shall deem advisable, to be used and applied by such association only for the support, maintenance and equipment in such city, of a dental clinic or clinics, for the free treatment of indigent children not over the age of sixteen years, residents of such city, and for no other purpose whatsoever.

2. In any city where an appropriation is made under the provisions of this act for the maintenance and equipment of such dental clinics, the officers of the dental association to which such appropriation is made shall furnish annually, at the beginning of each fiscal year, to the board or body having control of the finances of such city, a report of the number and kind of cases treated by such clinic or clinics, together with a detailed statement of all expenditures made from any sum or sums of money so appropriated by such governing body having control of the finances of such city, for the maintenance and equipment of such clinic or clinics. This act was passed March 27th, 1913, and is to take effect immediately.

## *How the Teeth Affect the Eyes.*

THE name "eye-teeth" shows that some relationship between the eyes and the teeth has long been popularly recognized. There is no reason to suppose, however, that the relationship is limited to any particular tooth or group of teeth. Dr. W. E. Bruner, in an article in *The Annals of Ophthalmology*, treats this subject, and particularly the production of diseases of the eye or disturbances of vision from abnormal conditions in the teeth. Our quotations are from a review in *The American Journal of Clinical Medicine* (Chicago, February). After noting several minor eye-troubles due to defective teeth, especially in the upper jaw, the reviewer says:

"Blindness following the extraction of a tooth has been reported. Organic or structural changes in or about the eye, resulting from the teeth, have been observed in many varied forms; and inflammation of almost every structure of the eye, depending upon or at least attributable to dental trouble, has been reported."

The writer notes that when septic conditions about the mouth are found in a patient upon whom an operation upon the eyeball is contemplated, it is most important to correct this condition before proceeding to any operation. Blindness has even followed decay of the teeth extending to the floor of the orbit and involving the optic nerve. The reviewer goes on:

"The remarkable fact upon which the author lays particular stress is that not infrequently the patient is wholly unconscious of anything wrong with his teeth, and he will state that the latter are examined regularly by supposedly competent dentists. The author has grown to be suspicious of a mouth showing numerous gold crowns and fillings, and he places great weight upon an X-ray examination, which he insists upon when he does not feel certain of the work previously done. He has thus succeeded in several instances in finding abscesses at the roots of teeth, or improperly filled roots, where nothing wrong was suspected by the patient, with the result of securing relief of the ocular symptoms by treatment of the pathologic dental condition."—*Literary Digest*.

## *Oral Hygiene Among Uncivilized Peoples.*

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**A**CCORDING to their religion, Musselmans must, before prayers, give themselves up to ablutions of the entire body in order to purify it. The care of the mouth is a part of the ablutions.

Tradition relates that the Prophet cleaned his mouth after meals with a stick of liquorice wood, which had previously been masticated, so that one of the extremities consisted only of woody fibres which formed a kind of brush and was used as a tooth brush. If, at the time of his ablutions, the Arab had not ready those substances with which he was accustomed to clean his teeth, he simply rinsed his mouth, and if he had no water he confined himself to simulating the ablution.

There is an extract from the Arab precepts as regards hygiene taken from the philosophy of Sidi Khalil, "It is necessary that every Wednesday a man should perform ten things revealed by our Father Abraham, or at least some of them if he is not able to accomplish all. One of these ten instructions is to use souak for the mouth.

Souak is used by the Arabs for the care of the mouth; but some, especially among the women, like to use this drug for cosmetic purposes. The Arab woman proceeds in this way: she takes a fragment of bark, three or four centimetres long and a centimetre broad, and she chews this substance for half an hour, after which she uses it to rub the teeth and gums. Under the action of this product the teeth become very white and the gums and lips taken on a beautiful red color. Certain Arab women, in order to perfume the breath and to complete this cleansing of the mouth, masticate, for a portion of the day, a resinous gum which is known in Tunis by the name of elloubane. This resinous gum, of which we have received a specimen, is no other than *olibanum* (frankincense).

Souak is used in many of the countries of Northern Africa, such as Tunis, Algeria, Egypt, Asia, etc., etc. In all these countries souak is an important article of commerce; its cost varies from frs. 300 to frs. 800 a kilo. Arabs chiefly use it, but other people living in contact with them, having learnt to appreciate its advantages, also make use of it.



Throughout the East betel is used, especially as a masticatory. It is a complex product whose principle constituent is the leaf of a climbing plant of the family of piperaceae mixed with lime and areca nut. This substance has a certain physiological action which Orientals cannot dispense with without the risk of bringing on a cachexia.

Among the Senagalese sotion is used; it is a real natural tooth brush. This brush or "sotion" is nothing more than a little stump of a branch or root got from certain trees or bushes of the country; its length is usually ten to fifteen centimetres, and it is about as thick as a pencil. In order to make a sotion the bark is removed from a part of the little branch and its end is chewed until it is quite clean, so that one has a kind of brush with very short (about two centimetres) but very stiff bristles, with which the teeth are vigorously rubbed from right to left and from above downward.

A great number of trees furnish this brush; they chiefly belong to the family of leguminosae, examples of which are acacias, tamarinds, etc. The use of this preliminary tooth brush has spread throughout Central Africa, even to the western side, and is found in Nigeria, the Congo, etc. The Malgaches take great care of their teeth, and use a powder made from rice, which is calcined and pounded. The negroes of the Antilles also use, for the preservation of their dentition, little branches and roots of certain plants. This brief review shows how the custom of some still savage or half-civilized nations leads one to think that they all take the greatest care of their teeth and that the cleanliness of the mouth and teeth appears instinctive among these primitive races.

It might be added that it is disquieting that it is not always so amongst civilized people. *Le Journal Dental Belge*.

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**D**ENTITION should produce no general disturbance of the system. Cachectic or scrofulous children will exhibit certain symptoms at this time, but faulty nutrition and not the erupting teeth must bear the blame.

The smallest excitement will serve in the case of such children to produce the characteristic symptoms. I agree entirely with Feer that exact observations as to the existence of dentitional disorders still remain to be made; but

in my opinion the assumption of such disorders is erroneous; the question rather is, in each case, how does the organism of the child respond to the process of eruption? Fist or thumb-sucking, refusal of food on account of tender gums, are common enough, also an accelerated action of the salivary and intestinal glands.

Nervous reactions sometimes occur and exact records have been made of the variations in temperature during dentition. Children have died of disorders set going at this period. Dentition is, nevertheless, not the cause. There are, properly speaking, no dentitional disorders, but pathological conditions may be revealed by means of the process of eruption.—Dr. Richard Flacks, of Dresden, *Correspondenz-Blatt für Zahnärzte*.

### *Three Notable Quotations.*

THREE men who are among the foremost medical authorities have made most emphatic declarations in regard to the relationship between general health and local oral conditions. These are as follows:

Dr. S. A. Evans:

“If we could do away with the mouth as a port of entry for disease, if we could do away with diseased and decayed teeth, we could go far toward eliminating 92 per cent. of the preventable diseases.”

Dr. Harvey Wiley:

“You cannot have good health without good teeth. It is of the greatest importance that children have good teeth. The dental inspection of the mouths of school children is equally as desirable as the medical inspection of school children. One thousand children die daily in this country, and the deaths are due more to bad teeth than to any other trouble.”

Dr. Osler:

“You have one gospel to preach, and you have to preach it early and late, in season and out of season. It is the gospel of cleanliness of the mouth, cleanliness of the teeth, cleanliness of the throat. These three things must be your text through life. Oral hygiene, the hygiene of the mouth—there is not a single thing more important to the public in the whole range of hygiene than that.”

## *Recent Dental Graduates.*

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### ROYAL COLLEGE OF DENTAL SURGEONS OF ONTARIO.

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**T**HE following men passed the combined examination of the Royal College of Dental Surgeons of Ontario and the University of Toronto, receiving the degrees of L.D.S. and D.D.S.:

Class I.—K. M. Johnson, J. H. Lumsden, C. R. Minns, A. D. MacPherson, W. M. McLaughlin, J. W. Reynolds, G. I. Robertson.

Class II.—J. C. Allan, D. L. Brown, C. V. Connolly, J. M. Dixon, J. R. Doyle, W. J. Fuller, L. S. Godwin, G. W. Harris, W. T. Haynes, C. M. Joyce, D. A. McCarten, W. J. McEwen, D. R. McLean, C. Purdon, M. W. Rutherford, H. M. Schweitzer, R. C. H. Staples, M. C. Tindale, W. C. Trelford, G. A. Cox, S. H. Zinn.

Class III.—J. B. Aiken, G. F. Allison, H. H. Armstrong, P. E. Crysler, J. A. Dean, A. J. M. Dolson, W. E. Hughes, E. J. Lehman, W. B. Leatherdale, W. E. Morgan (Chemistry), G. V. Morton, J. M. McKay, E. F. McGregor, D. A. P. McKay, M. P. Parkin, J. V. Pinard (Physiology), M. Pivnick, Miss L. M. Ryerse, C. E. Van der Voort, J. H. Wiltze, N. H. Winn.

C. W. Waldron has completed the combined course in Medicine and Dentistry.

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### MCGILL FACULTY OF MEDICINE.

Dental Department.

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J. McK. Wathen, Harcourt, N.B.; A. S. Solomon, Montreal; H. S. Gross, Montreal; M. Gold, Montreal.

## *The Buffalo Letter.*

BY HABEC.

SOME TRAVELER, YES.

ON the 10th day of March, A.D. 1913, "Habec" left Buffalo via the T., H. & B. and arrived in Hamilton when the train got there. Head Scout Clappison led the trail to the tepee of Big Chief McDonald, who, after officially welcoming "Habec" to the wigwam of the Hamilton Dental Society and offering him the pipe of peace, thereupon threw down the tomahawk of care and, going forth into the highways of the city, gave him a royal presentation to many of the brave warriors of the craft. Thus was the appendix of the P.M. spent most pleasantly. In the early evening some thirty handsome bucks, gaily arrayed in the customary trappings of the tribe, assembled about the campfire at the Hotel Royal to partake of the feast of peace. And they are some Indians, also. They showed to a degree many of those wonderful characteristics which have distinguished their forefathers for many ages, namely, fortitude, forbearance, long-suffering, self-restraint, etc., when they silently sat and suffered "Habec" to castigate their auricular outfits with an hour of piffle caserole from his language factory. Howsumever, be that as it may, the Hamilton Dental Society is a Simon-pure bunch of the right sort, and "Habec" enjoyed every minute of the time that he was their guest at their perennial eatfest. And, furthermore, we might add that the artist who assembled that banquet was a past potentate in epicurean harmony, according to our inside information. However, it is quite unnecessary to add that the committee on liquids were equally efficient and the results were all that could have been desired. The humble guest takes off his lid to the entire arrangement committee and sincerely thanks them for a delightful evening spent in their midst. And Dr. Hoggan came also—even from Richmond, Va., yet! And such a Hoggan is the doctor. A blind man with leather specks could see that the boys of Hamilton loved him, and even orthodontia is tolerable under such conditions. They have our sympathy in the loss of such a capable young man and the well-wishes of "Habec" are his. He will be successful



because the elements of success were born in him.

#### OUR BOYS IN MANHATTAN.

Perhaps it may interest you to know that the University of Buffalo Dental Department has nearly one hundred graduates practising in Greater New York and its immediate environs. And then again you may not give a rap about it, but that does not alter the fact that they are developing into a class of excellent practitioners who are becoming a power in the dental world of Manhattan. Their universal success has demonstrated the efficiency of the teaching methods of our school, and it is common knowledge that our graduates are far more successful than those of the schools of New York. Not long since "Habee" wandered down to the Island accompanied by our Dean, Dr. D. H. Squire and Dr. Abram Hoffman, to attend the annual dinner of the New York section of our Alumni Association. The grand rally took place at Healy's, with a beefsteak dinner as a memento and slight token of disregard. Did you ever feel desperate enough to tackle a beefsteak dinner and the embellishments thereof also? If so, you will remember the chest protector in the form of a butcher's apron you found at your place, which extended from your mental eminence to your patellar prominence, so that you might keep the gravy within due bounds. Thus adorned, you roll up your sleeves and plunge into the contest. It is truly surprising the quantity of good provender one will destroy under such conditions. But the good fellowship, the class yells, and the exuberance of spirit which seasoned every course was the best part of it all. Such gatherings do much to engender the true college spirit and strengthen the support of each alumnus, which is necessary for the prosperity of his alma mater. We of the States are beginning to see the wisdom which has contrived to unite the alumni of the R. C. D. S. of Ontario. If our reputable institutions but receive the loyal support of their graduates their success and usefulness are assured.

#### THERE WERE DOINGS IN ALBANY.

The annual meeting of the N. Y. State Dental Society happened at the Capitol on May 8, 9 and 10 last. It was the first convention of the Society to be held in the magnificent new Educational Building which the State recently completed. This fact in itself was significant and will do much, we believe, to keep the annual meetings in Albany. For upwards of fifty years the State Society has met there,

but of late there has been some agitation in regard to moving about the State. Perhaps the action of the New York State Medical Society may have some influence in this direction, for they met in Rochester this year, the first meeting out of Albany in 107 years.

Dr. Ottolengui started something under the title "Can the Illegal Practice of Dentistry be Limited by Law?" His imagination was overflowing with remedies for existing evils, which seemed quite impracticable. We all know that illegal practice can be limited by law if the good ones on our statute books are properly enforced. The profession individually is altogether too passive. The remedies the doctor advocated would give recognition to many who are little better than quacks, and the condition of Michigan might be duplicated. An excellent bill already has been introduced in the Legislature, which, when passed, will give New York State dental laws equal to any in the Union, and then it is up to us to stand back of them.

The X-ray as applied to the use of the general practitioner received much consideration, and it looks as though we are about to have radiographitis in some localities. Well, it is about time to start a new fashion. A New York dentist of prominence stated that he X-rays every root he is to fill, so that he may know all the curves and dips he is supposed to reach. He averages three to five victims per day at ten bones each, which is not so bad for a start. Within the last few weeks he has saved two lives by photographing the innermost secrets of the subjects and exposing them to the scrutiny of the cruel world. It seems to have it all over talking in your sleep as a give-away. Acute optimism is insidious and should be treated with antiphlogistine to remove the hypertrophy. But "Habee" stands up to register one for the great value of the X-ray in dental practice, and he is willing to admit that he is using it more frequently of late than ever before. Its importance is recognized, but it is almost silly to think of photographing every tooth under pulp canal treatment. Its dangers must be reckoned with, principal of which are burns, which sometimes prove fatal, and sterility. Remote as such dangers appear, however, the average dentist will do well to consider them before entering this field which the specialist so completely fills.

But the best thing that happened at the meeting was the position which Professor Geis, of Columbia University, has taken in relation to the theories of our old friend, Dr. Low,

regarding sulphocyanates in the saliva. "Habeo" long has had the deplorable habit of airing the dissensions of the contestants on this subject in the column of the late lamented *Dental Practice*, so you will be spared further infliction in that direction. However, many of the readers of ORAL HEALTH may recall the fact that in his report of last year Prof. Geis warned our profession not to administer sodium sulphocyanate as recommended by Dr. Low, because of its poisonous action. In his report this year he made complete retraction, having administered to himself as high as three grains daily for two weeks without the slightest indications, toxic or otherwise. With such absolute proof of the harmlessness of this treatment, the dental world is justified in using it in the control of dental caries.

AMPUTATE THIS FROM YOUR VACATION.

August 25—30 next is the time you should spend in Buffalo attending the greatest Congress on School Hygiene which the world has ever known. Seven foremost scientific and educational associations will unite in this great Congress—seven. Here they are: The National Mouth Hygiene Association, the American Federation of Sex Hygiene, the International Society for the Prevention of Blindness, the Society of Illuminating Engineers, the Society of Directors of Physical Education in American Colleges, the National Committee on School Feeding and the National Committee on Mental Hygiene. Think of it! A seven-ringed performance all for the price of an excursion ticket and a little spare change. All roads will lead to Buffalo as the centre of the greatest pedagogic propaganda in the history of civilization from August 25 to 30 inclusive. Come and see us.

HABEO.

### ***Nasal Obstruction and Tuberculosis.***

THE normal nose is an organ through which air easily passes, where it is warmed, has its humidity increased, is cleansed of dust, and sterilized before entering the lungs. These conditions are not satisfied when the air passes through the mouth, which is intended for the passage and preparation of food. If from any cause the nasal fossæ are partially or totally obstructed, physiological functions are immediately hampered or suppressed, and the mouth is called upon to take its place. Numerous troubles result therefrom, not of great importance if the obstruction is of short duration, but perilous to the extent of bringing on tuberculosis if the obstruction is allowed to remain.—Basel Eleelay.

## SOCIETY ANNOUNCEMENTS.

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### *Maritime Convention.*

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**A** UNION meeting of the New Brunswick, Nova Scotia and Prince Edward Island Dental Associations will be held at Moncton, N.B., Tuesday and Wednesday, July 8th and 9th. This will be the greatest dental convention ever held in the Maritime Provinces. Two days of clinics, papers, discussions, demonstrations, entertainment, together with the most comprehensive and extensive exhibits ever shown in Eastern Canada.

A business meeting of the N. S. D. A. will be held in Halifax, Monday, July 7th.

Don't forget the dates.

S. G. RITCHIEE, Secretary.

---

### *Ontario Dental Society.*

---

**T**HE following officers have been elected for the year 1913-14:

Hon. President—J. A. C. Hoggan, Richmond, Va.

President—W. C. Davy, Morrisburg.

Vice-President—C. A. Snell, Essex Centre.

Secretary—W. A. Black, Toronto.

Treasurer—A. W. Ellis, Toronto.

Supervisor of Clinics—W. B. Amy, Toronto.

District Representatives—1, A. W. Winnett, Kingston; 2, J. F. Simpson, Trenton; 3, P. E. Clarkson, Toronto; 4, R. T. McDonald, Hamilton; 5, V. L. Heath, Woodstock; 6, J. R. McGregor, Elora; 7, P. T. Coupland, St. Marys.

Archivist—C. A. Kennedy, Toronto.

Oral Hygiene Committee—W. C. Trotter, R. J. Reade, R. G. McLaughlin, H. E. Eaton, F. C. Husband.

Programme Committee—G. W. Grieve, E. I. Zinkan, J. E. Rhind, D. R. Callum, W. E. Willmott.

Research Commission—A. E. Webster, W. E. Cummer, R. D. Thornton, C. G. Scott, C. A. Corrigan.



***Canadian Public Health Association,  
Regina, Sask., Sept. 18th, 19th and 20th.***

THE third Annual Congress of the Canadian Public Health Association will be held in Regina, Sask., on Sept. 18th, 19th and 20th. This will be the first occasion on which the members of the Association have met in the West.

At the Congress held in Toronto last year communications were read from the city of Regina and the Government of Saskatchewan, inviting the members to make Regina their next meeting place. These invitations were unanimously accepted, and a hearty welcome will therefore be extended to the Association by Saskatchewan's Provincial Government and its capital city.

The Provincial Government, realizing the educational value of such a conference, and the stimulation of interest which it will effect in matters of public health, have decided to bring all the Medical Health Officers of the Province, some 200 in number, to the Congress.

There is, therefore, every indication that the attendance will equal, if not surpass, that of the two previous meetings, in Montreal and Toronto.

Following the decision to hold the convention in Regina, the Executive Committee of the Association at Ottawa elected Dr. M. M. Seymour, Commissioner of Public Health for Saskatchewan, convenor of the Local Arrangements Committee.

Local committees have already been formed, and are actively engaged in preparing a programme of outstanding strength and interest. Several of the most prominent health authorities of the Dominion and the United States will address the convention.

So many important conferences are being held in Regina this year that Regina is becoming known as the "Convention City" of the West.

This fact is in itself significant, and the local executive extend a hearty invitation, not only to the public health officials who annually attend the Congress, but to all who are in any way interested in the health of the people, to spend a short vacation in Regina next fall.

Apart from the high standard of instruction and education which the committee are aiming at in the programme, every possible provision will be made for the comfort and entertainment of the visiting guests during their stay in the city.

The Secretary to the Local Arrangements Committee is Mr. R. H. Murray, Engineer to the Bureau of Public Health, Regina. The names of sectional convenors will be announced later.

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### ***Fourth International Congress of School Hygiene, Buffalo, Aug. 25th-30th.***

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**O**RAL HYGIENE" will occupy a prominent place on the programme of the Fourth International Congress on School Hygiene, which will be held at Buffalo the last week in August. A special symposium is now being arranged under the direction of the National Mouth Hygiene Association. Papers will be read upon the subjects of "Dental Inspection," "Dental Dispensaries," "Dental Clinics in the Public Schools," and various other topics of special interest in the dental profession.

One of the exhibits will be the motion picture films, entitled "Tooth Ache," which are produced under the auspices of the National Mouth Hygiene Association.

The first International Congress was held at Nuremberg in 1904, the second at London in 1907, the third at Paris in 1910.

The objects of the Buffalo Congress are:

(1) To bring together men and women interested in the health of school children.

(2) To organize a programme of papers and discussions covering the field of school hygiene.

(3) To assemble a school exhibit representing the best that is being done in school hygiene.

(4) To secure a commercial exhibit of practical and educational value to school people.

(5) To publish the proceedings of this Congress and distribute them to each member.

## ***Compulsory State Medical and Dental Inspection.***

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**D**R. W. S. KING, of Ashtabula, member of the Ohio State Assembly, has prepared a bill providing for the compulsory medical and dental inspection of school children in every school in the State and at the expense of the State.

The results in Cleveland, Columbus and Cincinnati have been of such a character that it is desired to extend the work to all of the school children of the State.

One dentist and one physician are to be employed in each village and city, at compensation which the Board of Education may determine, for every 2,000 school children or less. In Columbus, for instance, it would require at least thirteen inspectors in each branch, but in the great majority of towns one in each profession would be sufficient.

### **METHOD OF PROCEDURE.**

The inspectors do not make the corrections. They note the child's teeth, the general health and any other defects which may tend to lessen their efficiency or to prevent them from receiving the full benefit of their school work. Then if defects are found the pupil is sent home with a note outlining the trouble, and requesting that the child be sent to the family dentist or physician before he or she is returned to school.

Dr. King's bill also provides that teachers shall make annual vision tests to discover defects in the sight of their charges, and that a complete index record of the health of all children shall be kept by the examiners.

The State Board of Health and the Superintendent of Public Instruction are empowered to draft rules governing the tests and the examination and failure on the part of the school boards to make the necessary appointments are to be punished by a fine of not less than \$10 nor more than \$50.

While the measure introduced by Dr. King is molded after the Indiana law, similar legislation has been enacted in New Jersey, District of Columbia, Massachusetts, Vermont, Virginia, Utah and Maine.

Dr. E. F. McCampbell, Secretary of the State Board of Health, and officers of the Ohio State Medical Association and other public health organizations are exerting their influence to have the measure become a law, believing that it will result in immeasurable benefit to the citizenship of the State.

## PERSONAL ITEMS.

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[Under this heading we are planning to publish each month a page or two of personal items of general interest concerning members of the dental profession. Notices of marriage, election to public office, moving from place to place, etc., etc., will be gladly received. We are not even averse to publishing birth notices.]

---

**D**R. W. C. SMITH, of Welland, and Dr. S. B. Gray, of Stratford, have each decided to move to the city of Toronto. Dr. Godwin, of Toronto, is to take up Dr. Smith's practice in Welland.

Drs. P. D. MacSween and F. P. Smith, of New Westminster, and J. Milton Jones, of Vancouver, have been elected for the terms of five, three and two years, respectively, to the British Columbia Dental Council. Drs. H. T. Minogue and A. Brighthouse, of Vancouver, complete the membership of the Council.

On account of ill-health, Dr. Brace, of Brockville, has disposed of his practice to Dr. Lehman, a recent graduate of the R. C. D. S.

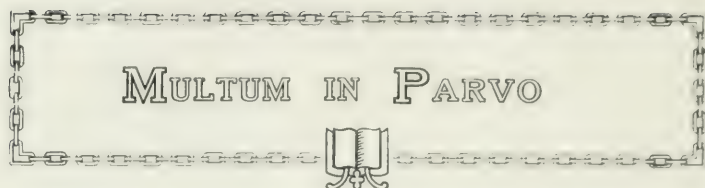
Dr. R. Lederman, of Milverton, has disposed of his practice to Dr. Merton Tindale and has decided to practise in Regina.

Dr. Sylvester Zimm is opening an office in Hanover, Ont.

Dr. C. B. Taylor, St. Thomas, has been re-appointed Secretary of the St. Thomas Board of Trade.

Married: MacPherson-Fowler—On May 10, 1913, at the home of the bride's parents, Hawkesville, Ont., Ruby Dell, daughter of Mr. and Mrs. Andrew Fowler, to Donald Alexander Macpherson, D.D.S. Dr. Macpherson graduated this spring from the R. C. D. S.





This Department is Edited by C. A. KENNEDY, D.D.S.

*Helpful Practical Suggestions for publication, sent in by members of the Profession, will be greatly appreciated by this Department.*

*Address. C. A. KENNEDY, D.D.S., 2 College Street, Toronto.*

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**ZINC CHLORIDE FOR HYPERSENSIVITY OF TEETH.**—Hyper-sensitivity of the necks of teeth in its early stages can be almost wholly removed by the use of full strength zinc chloride in two or three applications at different times. Silver nitrate, usually used for this class of case, leaves an unsightly black margin. Zinc chloride leaves no discoloration, and its action is at least equal to that of silver nitrate.—H. C. Moxham, *The Dental Record*.

**A SIMPLE METHOD OF REMOVING A SHELL CROWN WITHOUT MUTILATING.**—Drill a small hole buccally just below the occlusal surface and insert an old instrument with a slightly curved point (a good stiff worn-out excavator will do), and by using the end of the root as a fulcrum, it is surprising the ease with which the crown will come off, alike satisfactory to operator and patient. It is a very easy matter to patch the hole.—H. R. S. Taylor, in *New Zealand Dental Journal*.

**A USEFUL ARTICLE.**—Keep salt, borax and saltpetre in small round bottles, such as used for Sal Hepatica samples. Perforate the removable top.—E. B., Chicago.

**REMOVING A POST FROM ROOT.** In removing a post from a root with a post-puller cut a piece of German silver to go over end of root, puncture, allow post to pass through and then remove the post. This eliminates the possibility of splitting the root in case the end should be uneven.—E. T. Tinker, D.D.S., Minneapolis.

**GUTTA PERCHA FILLINGS.**—Oil of cajuput smeared over the walls of a shallow cavity will cause warm gutta percha to adhere to them with very great tenacity. If it is impossible to keep the cavity dry, warm the gutta percha, dip it in oil of cajuput, and it will adhere perfectly, no matter how wet the cavity may be. This makes it extremely useful in the case of little children or patients in bed.—*The Dental Record*.

**COATING OF PLASTER CASTS.**—

R Sulphuric ether, .....	3iv
Collodium, .....	3ii
Silver Glass, .....	3ii
Mix.	

**Sig.**—Use as a coating to plaster casts. The silver glass may be obtained from dealers in painters' supplies. Keep the solution well corked and allow it to stand forty-eight hours before using and apply with camel's hair brush, giving your model a nice white, glossy surface.—R. L. Lewis, Chicago.

**PAIN AFTER EXTRACTION.**—One of the most frequent and distressing symptoms following extraction is pain—which may be of two characters, either from inflammation or neuralgia. If the origin of the pain is inflammatory, time, with local applications of a soothing nature, will accomplish much.

When the socket is extremely painful after the extraction of an abscessed tooth, I frequently give it a thorough swabbing with pure carbolic acid, with good results, and by using a normal saline solution in the mouth every few minutes, as hot as can be borne, together with cold applications, or an ice bag on the outside of the face, your patient is soon comfortable.—J. F. Hasbrook, *Items of Interest*.

**DECOLORIZING THE IODINE STAIN.**—H. Chabanier and E. Chabanier state that decolorization is important, not only for the sake of the operator, but because the tincture of iodine, after being allowed to remain in contact, for a few minutes, with the site of operation, may be rendered colorless without prejudice to its antisepticizing properties. Sodium hyposulphite is the decolorizing agent preferred, made with sterile warm water in ten per cent. strength. Another important point is that if the operator violates his aseptic technique he may restore asepsis by immersion of the hands in tincture of iodine mixed with an equal part of alcohol, and a subsequent dipping in the hyposulphite solution. The hands are then both surgically and esthetically clean.—*Presse Médicale*.

## ORAL HEALTH.

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Vol. 3

TORONTO, JUNE, 1913.

NO. 6

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## EDITORIAL.

### *The First Fruits.*

TORONTO has now one Public School in which the mouth conditions would satisfy the most ardent advocate of oral hygiene. This is one of the smaller schools, Lee School, in which there is not a mouth that is not thoroughly clean, and not a single child with a single cavity, in either deciduous or permanent teeth, requiring attention.

This represents part of the early work of the municipal dental clinic which was opened in February last under the supervision of Dr. J. A. Bothwell. The completeness of the results obtained in this school is due to the fact that all of these children are wards of a charitable institution. The superintendent of the institution is alive to the beneficial results of mouth hygiene, and as no parental consent is necessary and the treatment is free, every child in the school requiring it received the very best that dental skill could provide.

It seems impossible at the present time to obtain such a completely satisfactory result in some of the better schools of the city. Parents are in many cases unwilling to pay a fee for treatment of the deciduous teeth, and yet it is these teeth, decayed, putrescent, abscessed, prematurely lost or too long retained, that cause the bulk of the distressing conditions found in the mouths of school children.

Oral hygiene demands the thorough care and treatment of the teeth of the child. It is a professional duty for the members of the profession to urge upon parents the vital importance to their children of such care and treatment. If the parent is thoroughly convinced of this fact, both an appreciation of the service rendered and any reasonable fee therefore will be forthcoming.

With the establishing of dental clinics we may have the anomalous condition of the child of the poor receiving better dental service than many of its otherwise more fortunate fellows.

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### *School Dental Clinics for Toronto.*

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**S**OMETHING over a year ago the Canadian Public School Nurses Association donated a dental equipment for one of the Toronto schools. The Board of Education recently augmented this by the addition of three others, so that there is now a dental clinic in each of four widely scattered schools. These clinics form part of the Board of Education's Department of Medical Inspection. At present there are two salaried dentists, each of whom will have charge of two of these clinics, being on duty at each for three half-days per week.

\* \* \* \* \*

**T**HE clinic situation in Toronto at present is: A Municipal Dental Clinic of three chairs, under the Department of Health, open from 9 to 5 every day except Saturday, when it closes at noon; and four school clinics under the Department of Medical Inspection of the Board of Education, each open three half-days per week.

\* \* \* \* \*

**I**T has, on a number of occasions, been urged in these columns that one of the great difficulties in the way of the practice of mouth hygiene by Public School pupils is the lack of knowledge of its importance by the majority of Public School teachers. Mr. John Dearness, M.A., of London Normal School, in an address before



the Hygiene Section of the Ontario Educational Association, stated that in his last class not a single member of these teachers in training knew that there was such a thing as a "six year molar." He stated that the only evidence of the proper teaching of mouth hygiene by a teacher, that could be accepted, was in the cleanliness of the mouths of her pupils. He also made the very practical suggestion that in teaching mouth hygiene to a class of children each child be given a small mirror that the mouth itself might be used to illustrate and impress upon each pupil the points of the lesson.

Following Mr. Dearness' address, the following resolution was moved by Dr. A. P. Knight and seconded by Mr. John Dearness, M.A.:

"That a committee consisting of Dr. W. E. Struthers, Dr. C. A. Hodgetts, Dr. W. H. Doherty, Mrs. Hustis and Miss Elwood, be appointed to wait upon the Minister of Education and urge that more prominence be given to the teaching of physiology and hygiene in the Public Schools and that these be added to the course of High School studies and be made compulsory for those intending to become teachers."

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### ***Oral Hygiene Reports.***

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#### *Montreal, Que.*

Dr. J. L. Laberge, City Health Officer, is making a recommendation to the Board of Control that a dental clinic be established under municipal control. Dr. Laberge says: "The school medical inspection reports compiled every month show high figures in the case of children having bad teeth, and I do not believe that we shall be able to make any great headway towards an improvement until we are in a position to ourselves look after the children's dental needs."

#### *Boston, Mass.*

The sheriff of Suffolk County, Mass., in which Boston is situated, declares that defective teeth are the cause of much of the crime now rampant. Teach a man to care for his teeth and his nails and his hair and you implant in his mind the first law of decency, says the sheriff. So when a man is brought into jail the sheriff sends for a dentist and has his teeth attended to. He declares that already there is a

marked difference in the mental attitude of the prisoners so treated. Bad teeth cause indigestion. Indigestion gives a man a waspish and irritable temper, and then trouble ensues. Wherefore, when a man raises "Ned," call in a dentist instead of a doctor.

*Oklahoma City.*

At the Oklahoma County Dental Association meeting on April 8th, Dr. Watkins, Chairman of the Oral Hygiene Committee of the State Dental Association, explained the methods followed by thirty-five cities throughout the United States which already have inaugurated a dental inspection system in the public schools. The reports from these cities demonstrate the excellent headway made by raising the general physical conditions of the school and the efficiency of the pupils as the result of better sanitation.

It is planned, during the coming year, to have one lecturer employed in the east side of the State and another in the west side. These lecturers will work among the county teachers' associations and will co-operate with the Women's Auxiliary of the State Board of Agriculture.

*Brantford, Ont.*

Dr. P. P. Ballachey and Dr. Watson, both members of the Board of Education, have offered to open a dental clinic in the schools of Brantford for the purpose of examining the school children's teeth.

*Mobile, Ala.*

Dr. A. B. Horne, of Union Springs, Ala., read a paper before the Alabama Medical Association on the subject of dental inspection in the Alabama Public Schools. Dr. Horne made a plea for higher standards of oral hygiene among the pupils and strongly recommended the inauguration of a system of dental inspection.

*Lowell, Mass.*

The municipality has opened a dental clinic upon a permanent basis, and it is so planned that the work among children will be done in a systematic manner.

*New York City.*

The Department of Health has announced that six dental clinics for school children have been opened. The clinics were made possible by a provision in the 1913 budget. In the department's statement it is noted that about 420,000 of the 700,000 children in the city schools are in urgent need of dental treatment.

The Second Avenue Baptist Church, at Tenth Street, employs doctors and dentists for work among the poor of the district.

*Jackson, Miss.*

The dentists of Jackson are delivering occasional lectures in the public schools on the subject of oral hygiene, telling the little folks how to take care of their teeth.

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*Obituary.*

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## MR. ARTHUR J. PARRY.

**I**T is with regret that we note the death of Mr. Arthur J. Parry, manager of the Temple-Pattison branch in Calgary. Mr. Parry took ill with typhoid-pneumonia on April 10th, passed away on the 19th, and was buried from St. Thomas' Church, Toronto, on Saturday, the 26th.

Mr. Arthur Parry was in the employ of the Temple-Pattison Company for about five years; for the past three years was assistant at their Winnipeg branch, and was promoted to the managership of the Calgary branch on the 1st of March. A very handsome wreath was received from the Winnipeg Dental Society and also a telegram of condolence and a handsome wreath from the Calgary Dental Society.

## DR. OLIVER MARTIN, SR., OTTAWA.

**D**R. OLIVER MARTIN died at his home, 129 3rd Ave., on Tuesday, the 6th of May, 1913.

In 1858 Dr. Martin moved to Ottawa and was subsequently joined in partnership by his brother, Dr. Chas. Martin. About thirty-seven years ago the deceased retired from active practice owing to ill-health. Dr. Oliver Martin, of Ottawa, is an only son, and Dr. Charles and Dr. Alexander Martin, of Ottawa, are brothers.

Lives of great men all remind us,  
We can make our lives sublime,  
And, departing, leave behind us  
Footprints on the sands of time.

LONGFELLOW—*A Psalm of Life.*





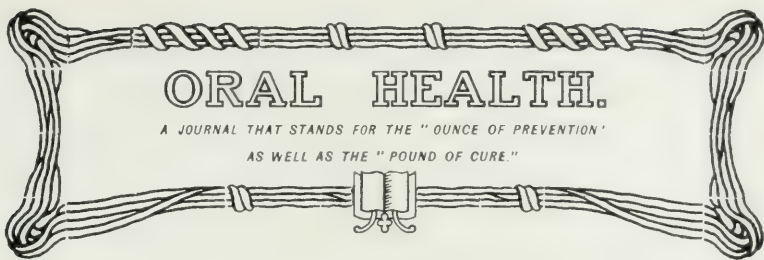
The Late GEORGE CHRISTIE MATHISON, L.D.S., D.D.S.

Winnipeg . . . Manitoba

Born June, 1876

Died June 14th, 1913

Graduate of the Philadelphia Dental College and the Royal College of  
Dental Surgeons of Ontario



VOL. 3.

TORONTO, JULY, 1913

No. 7

## ***The Therapeutic and Surgical Treatment of Devitalized Roots.\****

By DON M. GRAHAM, M.D., D.D.S., DETROIT, MICHIGAN.

HERE have been so many short-cut methods offered for the treatment of devitalized teeth that the object of this paper would be accomplished if it established the fact that mummification, medicated cottons and powders, and paraffins, as ordinarily used, are scientifically wrong and in most cases expose the patient on whom they are used to a very serious danger. I have taken it for granted that we have all outgrown the mummifying fallacy, and that we no longer sanction medicated cottons and similar fibers, but the use of medicated powders we know to be very general to-day. When we recall that these will become disintegrated by the fluids of the apical tissues, and that they have the more serious defect of acting deleteriously on the tissue cells, on account of the constant action of the incorporated drugs, we realize that their use is scientifically wrong, and that their employment as a *permanent* canal obturator amounts almost to malpractice. Their employment as a temporary treatment can be justified, and in this connection their use in deciduous teeth can be sanctioned, although their employment is not entirely without danger. The insidious liquification of the apical tissues, where these powders are used, is proven by the radiograph, which shows often large areas of necrosis over teeth which show no outward appearance of disease. Indeed, some of the worst cases of necrosis the writer has ever seen have

\* Read before the Elgin Dental Society at its meeting held in St. Thomas, Friday, April 25th, 1913.

occurred over teeth treated in this manner, and the seriousness of the condition was not revealed until a vast area of osseous structure was destroyed. The tissues, no doubt, succumbed gradually to the action of sepsis, after their vitality was reduced by the deleterious effects of the medicaments.

In the light of some recent advances, let us consider, for a moment, a few essentials of a successful permanent root-canal material.

It must be easy of manipulation and insertion.

It must be non-irritating to the tissues so that accidental protrusions may cause the least possible reaction.

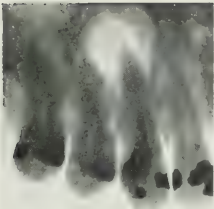
It must be non-absorbable, that the tissue fluids cannot disintegrate it and convert it into a fertile field for infective processes.

It must possess sufficient resistance to the X-ray to enable us to ascertain the condition of our root-canal filling.

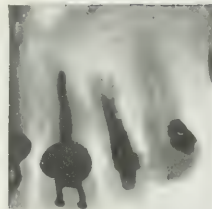
It must be easy of removal to permit of after treatment of the canal, if necessary, or for the insertion of a dowel.

It must not possess medicinal activity to cause deterioration of the apical tissues.

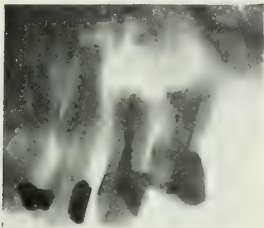
A wider knowledge and a better understanding of the minute anatomy of the dental canal, which has been robbed of its pulpal tissue, would shed a flood of light on this obscure chapter of dental pathology. Opening into the canal proper, we will recall, are innumerable tubuli whose lumen contain certain remnants of pulpal tissue or fribillae. It has been conclusively proven that a septic root, containing as it does innumerable septic tubuli, cannot by the strongest antiseptics be sterilized beyond a short distance of the canal wall. Bichloride of mercury, and even formo-cresol, are incapable of sterilizing the dentinal tubuli. This being the case, it is imperative that our root canal proper be obliterated if we expect to prevent absolutely reinfection from this source. Theoretically it would be necessary to completely obliterate the canal to the apical foramen before we could reasonably hope for success in the treatment of septic teeth. Practically, however, nature coming to our assistance, many of these teeth, although their root canals are not obliterated throughout their entire length, remain comfortable and serviceable. Even in these cases we can find, almost without exception, radiographic evidences of inflammation and liquification of apical tissues, although the phe-



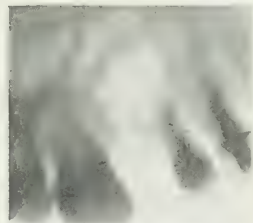
1.—Large area of necrosis over cuspid demanding amputation



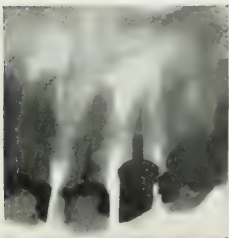
2.—Perforated lateral with apical abscess



3.—Amputated cuspid and bicuspid



4.—Amputated first bicuspid



5.—Abscesses over upper incisor teeth as a result of poor root-canal work



6.—Abscess over central whose canal is only half filled

nomenon does not rise to the plane of clinical observation. Considering the impossibility of complete sterilization of dental tubuli, together with the above-mentioned essentials of a permanent root canal material, it would appear that we are safe in stating that up to the present time we have but two materials which can lay claim to the right of being considered permanent root canal materials—gutta-percha and paraffin, as suggested by Dr. Printz, the melting point of which is not less than 135 degrees Fahr.

Regarding the recently devitalized tooth, it seems immaterial whether we remove the pulp by high pressure, arsenic or under analgesia, the necessity of asepsis is paramount.

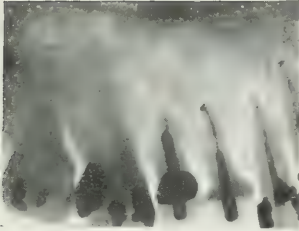


The rubber dam, the sterilized broach, and in so far as we can, aseptic root-canal materials are demanded. A succession of lame, recently devitalized teeth, can often be explained by the use of septic broaches. The tooth, recently devitalized, or the tooth which suffered little peri-dental inflammation, when filled with a suitable root canal obturator, appears to be quite as useful a member as is its vital fellow. It is only when we fall short of sealing the apical end by our root-canal material that we court future trouble. Indeed, a devitalization which is accompanied by faulty technique may be said to be the beginning of the end of that tooth. The fact is, however, that very few teeth are filled just to the apical end, and the possibility of hermetically sealing the apical foramen of a tooth in situ is questionable. One hundred radiographs of devitalized teeth would show probably not more than ten well filled root canals, with twenty-five per cent. of canal treatments falling a little short of, or pressing a little beyond the foramen, the balance ranging anywhere between the pulp chamber and the apical third of the root canal. We may conclude, therefore, that it is only nature's kindness that permits us to construct on the majority of our devitalized teeth comfortable and serviceable substitutes.

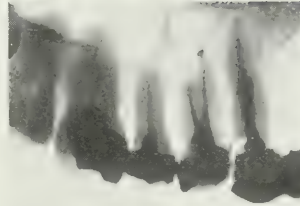
It might reasonably be expected that teeth with normal root canals could invariably be filled to the forament. Indeed, a much larger percentage of them could if more time and care were taken with our root-canal operations. It is the opinion of the writer that most failures result from the fancied necessity of charging only so much per for this class of work, and the inevitable haste in its performance. The first prerequisite for successful root-canal work is the consciousness by the operator that he is to be adequately recompensed for his time and skill. Such remuneration would appear to be not less than the fee exacted for an inlay in the same tooth.

The skill demanded for its successful accomplishment is certainly greater, while the importance of its successful outcome is infinitely superior to any restoration which might be demanded.

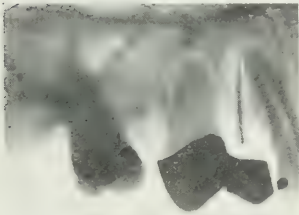
The teeth to give us the greatest amount of trouble are undoubtedly ones with constricted and tortuous root canals, but to their credit let it be said that these teeth are less likely to give after trouble if imperfectly filled, for the



7.—Teeth with overfilled root-canal material which caused much irritation, teeth being recently devitalized



8.—A study in root-canal work. Cuspid is well filled, first bicuspid with lingual root overfilled, second bicuspid with upper fourth unfilled while molar has but its lingual canal filled.



9.—Abscess over cuspid with diagnostic probe in position



10.—Abscesses involving three lower incisors



11.—Abscesses the result of poor root-canal filling

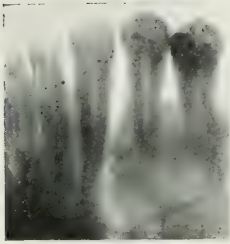


12.—A fistulous opening following line of probe which points to an abscess over poorly filled cuspid.

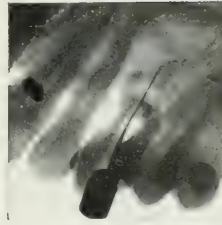
reason that there is less space for septic matter. Until very recently, the putrescent canal caused as much uneasiness, but with the advance in dental therapeutics in recent years, the uncomplicated putrescent tooth is approached with as little concern as is the recently devitalized tooth. With the formo-cresol treatment, the putrescent canal proper is made aseptic and its lumen obliterated quite as readily and successfully as its fellow which has been but recently devitalized. To be sure some care must be exercised in dealing with the medicant, as well as with the putrescent condition,

that irritating matter may not be forced into apical tissues. The average case will require not more than three or four treatments to place the canal in an aseptic condition, and ready to receive the canal filling.

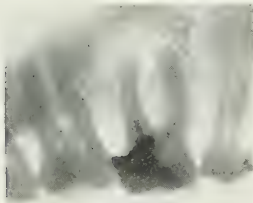
Drug worship has been quite as evident in the dental profession as in other departments of the healing art, and we have longed for the time when some drug, or combination of drugs, could be depended upon to relieve all pathological dental conditions which presents for relief. The truth is, but few drugs are specifics in the treatment of dental lesions. A working acquaintance and intimate knowledge of a half dozen drugs, far outweighs the possibilities of the employment, indiscriminately, of several score. I have neither the time nor the disposition to enter, exhaustively, into the question of dental therapeutics, which is a subject of sufficient importance to demand a separate and serious consideration. Only in the most general way shall I touch upon it, and, in passing, hazard the statement that the last few years has given us nothing new that is particularly and strikingly helpful in this department of our work. The importance of mechanical cleansing of root canals, the removal of every vestige, where possible, of nerve filaments and debris, is obvious to all of us. Where the infection has already invaded the apical tissues we have a very difficult problem to solve. In the first stage of inflammation, our treatment should be sedative and abortive. Opening into the pulp chamber and permitting the escape of gases, pus or blood, will relieve pain frequently, and will tend to abort the inflammatory condition of the apical tissues. An anodyne treatment to a congested pulp, for twenty-four hours, will allow of its successful devitalization by arsenic. Tincture iodine and aconite as a counter-irritant will sometimes be found useful. If resolution does not take place, and the pericemental tissues have become involved, we have a situation most trying to the patient and operator. In the presence of a septic canal we might hesitate to reach the apical infected zone with a broach, yet this procedure is often the wisest course to pursue. The abortive treatment should be kept up with the idea of relieving pain. Counter-irritants in the form of tincture iodine, hot water or capsicum plasters, can be used to hasten its termination if we cannot relieve the pain, which, if it persists, should be relieved by Dover's powders, magnesium sulphate, or even morphine may be administered. Hexamethalinamin, of which uro-



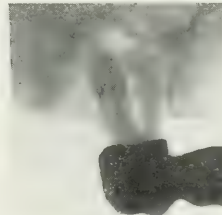
13.—Fractured Mandible



14.—Perforated cuspid with root bent almost a right angle



15.—Showing amount of root reclaimed in first molar, and a condition more common than supposed



16.—Molar Tooth with apical abscess which caused an antral empyema

tropin is a proprietary type, can be administered in ten-grain doses every few hours if necessary. Or we may anticipate the natural evacuation of the pus by making an artificial fistula over the inflamed area. When any considerable pus has become liquified, it is best to curette that granulation may early take place. In all of these cases, the necessity of a correct diagnosis is obvious, for have we not all made the mistake, at some time, in treating the wrong tooth, much to the discomfort of the patient and chagrin of the operator?

Sufficient tooth substance should be removed to permit a broach to enter in line with the root canal. Tooth substance can always be replaced by an indestructible material, and a good rule to follow for the removal of pulp, as well as the filling of small root canals is to open sufficiently until the entrance of the canal can be seen. It is often safer and better to proceed with fine straight broaches in tortuous canals, until the apex is reached, when its lumen can be enlarged by the barbed broach or the spiral hand broach. Sulphuric acid, as well as "potassium and sodium" preparation, can be used to good advantage in reclaiming these constricted canals, but it is exceedingly dangerous practice to use any form of engine reamer in these small roots. Some-



times we encounter canals which are anatomically impossible of complete cleansing, and sometimes we have the misfortune of breaking a broach, which prevents further advance. We are then compelled to make the best of an unfortunate situation, and one on which there seems to be no agreement. Then, again, in our endeavor to reach the foramen we may perforate the root. It might safely be said that the dentist who does not occasionally perforate a root does not show sufficient zeal to do generally high-class root-canal work.

With our canals in aseptic condition and sufficiently enlarged to receive the root-canal treatment, we are ready for the permanent obliteration of the same. Moistening the canal with eucalyptol and menthol, chloro-percha can be pumped into the canal with a suitable probe. The gutta-percha point, which has been carefully selected for size and dipped in alcohol, can follow and be pressed home. Pain responses are not always an evidence that we have reached the foramen with our material. Indeed, the occluded air is not infrequently the cause of this outcry of the apical tissues. The use of chloro-percha is not without its dangers, but it appears to possess more advantages than disadvantages, and for this reason only its use is recommended.

In the recently devitalized tooth we are more likely to fall short of complete obliteration of canal, for the reason that the peri-dental tissues will bespeak the advance of gutta-percha point, or occluded air. With the once putrescent or gangreous canal, the apical portion especially is enlarged, particularly if an abscess condition prevailed for some time, so that there is a danger of over-filling quite as much as under-filling. In these cases it is good practice to cut the tip of the gutta-percha point. If we reach the apical foramen we may consider ourselves fortunate. If we fall somewhat short of it we will probably never learn of our shortcoming. If we fall considerably short of it we are more than likely to get an infection through the dentinal tubuli, or a re-infection from the same source if the case was a putrescent one. On the other hand, if the material is forced through the foramen, there will be a soreness and an inflammation depending on the amount of material and the degree of resistance of the tissues.

Teeth with putrescent canals, or apical abscesses, we have seen, are more likely to have more protrusions than those more recently devitalized, but since the tissues have undergone inflammatory processes there is less likelihood

of severe irritation and more probability of an early encapsulation. In either case, if the irritation continues, treatment is demanded, and if the canal material is the only offending factor, it is comparatively easy to anaesthetize, cutting down and removing the offending material by scalers or burrs when the case may confidently be expected to continue to complete recovery. If, however, the tissues about the apical end have become resorbed, or the root eroded, and itself become an irritant, it is then necessary to remove such portions by means of burr or chisel, when the case may be expected to progress to comfort and usefulness. The amount of root that can be sacrificed in such cases is exceedingly large, and it is surprising with what comfort and satisfaction amputated roots perform their function. In multi-rooted teeth one root can be sacrificed and often a serviceable restoration in the shape of a crown or a bridge may be the result of such an amputation. Caution is demanded in the region of the maxillary sinus and the inferior dental nerve, in amputating or even curetting. The dentist who is not prepared to enter the antrum to recover a root tip, in case of accident in the amputation of upper molar or bicuspid region, should refrain from attempting such an operation.

In case of perforation of the root, it is by no means necessary to consign such a tooth to the forceps, for with care and patience the majority of these can be placed in good repair. If the perforation is located in the apical third, repair may be attempted by the use of gutta-percha or amalgam, preferably the latter, canal filled and if trouble arise the upper part may be safely amputated, if it be an anterior tooth. In the coronal portion of the root, perforation is less frequent, and more easy of access, when repair can be made and canal filled. If irritation follow, the outer border may be planed by scalers, burrs and sometimes small stones. If any evidences of sepsis remain, after these attempts have been made, there is but one course to pursue, and that is the extraction of the tooth. We cannot afford to leave a focus of infection which may at some inopportune time contribute to the grand total of adverse forces which may precipitate a serious illness.

Too many of us have viewed with complacency the abscessed tooth with fistulous opening, pouring forth its products of infection to be passed into the alimentary canal. Recently, however, more serious attention has been given to this, as to all other pyorrheal conditions, for have we not read and heard the fearful consequences which follow the

ingestion, and absorption from the alimentary canal, of such products. No attempt is here made to minimize the systemic dangers of pyorrheal conditions. Indeed, every effort should be directed toward the obliteration of such foci of infection to the end that the body forces, as well as the dental structures may be conserved.

Little, if any attention, however, has been given to the dormant abscess, a condition far too prevalent and revealed only by the radiograph. Innumerable teeth have on their apical ends pus sacs whose contents enter directly into the blood current and for this reason the danger is undoubtedly greater than when the pus first enters the alimentary canal which, in the healthy individual at least, is able to prevent its absorption, and where to a great degree the gastric juice destroys its virulency.

When these vegetable cells or germ life, enter directly into the circulation, by way of the pulp canal, for instance, we have no alimentary canal to protect the organism and it is, in truth, a war to the death between them and the body cells. If the invading germs can split up the tissue cells, they wax strong and multiply, when we have a train of symptoms which are so familiar to all of us in acute apical abscess. If the cells of the body can elaborate a ferment and split up the invading germ molecule the conflict stops short of abscess and absorption of toxins, which are responsible for the local and constitutional symptoms. How important then that we should give the greatest possible care to the complete obliteration of root canals to the end that no infection may be permitted to invade the tissues, and how equally important that we do not incorporate any nascent drug in our root-canal material that will lower the vitality of the apical tissues.

Indeed, the action of drugs, in medicated root-canal materials, if at all active, cannot be anything but deleterious to the tissues, reducing their vitality and rendering them a more easy prey to the attacks of micro-organisms. Surgery has practically discarded antiseptics and germicides as dressings for wounds, for the reason that the mildest of them seriously interfere with delicate tissue repair. Radiography has also conclusively shown that teeth so treated have about their apical ends, tissues that have undergone solution and disintegration, and there appears to be not a single scientific reason why a drug should be placed in the



permanent root-canal material. It would appear then that we have at the present writing but one tested root-canal material which in any way approaches the ideal. The wax or hard paraffin with an improved technique may shortly displace this material, but it must be remembered that it will require thousands of operations extending over a period of years, before we can be justified in assuming its superiority or even equality. In the meantime let us bend our energies to the improvement of this class of work that we may prevent much unnecessary infection and suffering.

We will conclude by the following summary:

Our root-canal work must be characterized by the strictest regard for asepsis.

A greater remuneration is demanded for this class of work, and it may reasonably be expected that there will be fewer faulty root-canal operations when we are more adequately compensated for our time and skill.

An intimate acquaintance with the anatomy of the dental pulp and its surroundings, as well as its pathology, is most necessary.

Drug worship, in the treatment of devitalized teeth, must cease if we are to do effectual and permanent work. Mechanical efficiency is imperative, since permanent obliteration of canal is the only scientific substitute for the dental pulp.

The impossibility of complete sterilization of dentinal tubuli explains reinfections and sub-acute inflammations about devitalized teeth whose canals have not been completely obliterated.

The coronal end of canal should be sealed with a high-grade impervious cement, and careful cementation of dowels to prevent air spaces is earnestly recommended.

Therapeutic treatment should not be carried beyond reason, nor should an active drug form any part of a permanent root canal filling. A tooth which does not show evidences of improvement after the third treatment should be radiographed, as should all doubtful and prolonged difficult cases.

Protrusions of root-canal material may be removed by scalers or burr, but when apical end of tooth is itself the source of irritation it should be planed or amputated. A tooth which does not yield to the latter treatment should be extracted.



## ***The Historical Relationship of Medicine and Dentistry.\****

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BY I. H. CAMERON, M.B. (TOR.), LL.D. EDIN., F.R.C.S.  
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Professor of Surgery, University of Toronto; Surgeon to  
the Toronto General Hospital, St. Michael's Hospital  
and St. John's Hospital for Women.

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**M**R. PRESIDENT (of the Royal College of Dental Surgeons of Ontario), Mr. Dean, Lady and Gentlemen of the Graduating Class:

I share with you the disappointment which we all must feel at the unavoidable absence of the Chancellor and the President on this auspicious occasion, and voice your regret as well as mine, in much greater degree, that when I received the Chancellor's command to represent him here to-night it was not his pleasure to add to ours by transmitting the address we had hoped to hear from him. That he should have devolved upon the Professor of Surgery, although unworthy, the duty of conferring the degrees, however, is not wholly inappropriate, because for forty years I have been engaged on the same lines of study and similar practical problems with yourselves, and am, therefore, in a better position to have a knowledge and just appreciation of your labors and accomplishments than even the Chancellor himself. I rejoice, therefore, that I am now afforded an opportunity to acknowledge publicly the great obligation we, who till the wider field of medicine, owe to the great advancement in knowledge and in technique achieved in the last quarter of a century by the devotees of dentistry, as is with much more clearness fully set forth by Dr. Edward Cameron Kirk in his admirable historical article in the *Britannica*.

Our arts and crafts are, indeed, sisters, having a common origin; and our science is one, being the eclecticism of all the sciences which can be made ancillary to the detection

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\*An address delivered to the Graduating Class of the Royal College of Dental Surgeons of Ontario, Convocation Hall, Toronto, 2nd May, 1913.

and the dissipation of disease and the relief and remedy of deformity and defects.

As to our common stem, have we not, both of us, Hippocrates "to our Father," and was not one of his monographs devoted to dentition and the teeth? But before Hippocrates was, you were, because Herodotus and others inform us that earlier attempts at Prosthesis in attaching wood and ivory teeth to adjacent sound ones by means of thread and wire were made by the Egyptians and Hindus. But that "stopping" or "filling" was practised in those early days, as once supposed, now seems doubtful, the latest investigation going to prove that the gold found in the teeth of Egyptian mummies was the leaf applied for purposes of ornamentation only, as some African tribes now blacken them. Grecian history affirms that among the Asclepiadae the study of the teeth as a part of medical investigation was not neglected. Coming down to Galen (A.D. 131, one of the great names in medicine, we find him writing of the teeth as "true bones, existing before birth," and also propagating another error in asserting that the upper canine teeth have a common innervation with the eye, and hence are called "eye-teeth" unto this day. In the 10th century Abuleasis treats of "artificial crowns"; and so on through the centuries the shining lights of Anatomy, Pathology, Surgery, such as Vesalius (1514), Ambroise Paré (1510-90), Scaliger (1484-1558), and Malpighi (1628-1694) are our common forefathers down to John Hunter (1728-1793), who demonstrated the possibilities of transplantation and made the tooth grow in the cock's comb—a justification perhaps for such modern dental fops as are not ashamed to don the cap and play the coxcomb.

The immediate progenitor of the modern dentist, however, is undoubtedly the Frenchman, Fauchard, who published his great work *Le Chirurgien Dentiste, ou traité des dents*, in the year of John Hunter's birth, 1728. In it he says: "The most celebrated surgeons having abandoned this branch of surgery, or having but little cultivated it, their negligence gave rise to a class of persons who, without theoretic knowledge or experience, and without being qualified, practised it at hazard, having neither principles nor system. It was only since the year 1700 that the intelligent in Paris opened their eyes to these abuses, when it was provided that those who intended practising dental surgery should submit to an examination by men learned in all the

branches of medical science, who should decide upon their merits."

Our common origin as practitioners must also be recognized in the fact that we are both legitimate descendants and offspring of the Barber, who, up till the beginning of the last century, phlebotomized on the one hand and did "extractions" on the other, and generally depleted the persons and the pockets of suffering—and sometimes long-suffering—humanity. In 1800 the Royal College of Surgeons of England, then called of London, obtained its present charter, separated as it had been by Act of Parliament of 1745, from the guild or commonalty of Barber Surgeons (existing since 1540), and it established and still has a class of "members or fellows of the Royal College of Surgeons of England practising Dental Surgery."

In 1801 appeared Dr. Blake's great work on *The Anatomy of the Teeth*, in which he lauds the labours of Urbain Hémaré in the same field away back in 1582, and which marks an epoch in the development of scientific dentistry. And about this time Joseph Fox arose, the first member of the medical profession to devote himself entirely to dentistry. He was succeeded as lecturer upon the *Structure and Diseases of the Teeth* at Guy's Hospital by Thomas Bell, who published his work in 1829, after which time considerable activity in dental writings was manifest, and to these Alexander Nasmyth made a notable contribution in 1839. Meanwhile the great Anatomists, such as Cuvier, Rousseau, Herissant, Retzius, Rosenmüller, Von Purkinje and a host of others, were not neglectful of the teeth, and the recognition of the nervous and other connexions and associations of affected teeth with diseased conditions elsewhere in the economy, led to a study of the whole subject as a branch of scientific medicine, the manipulative skill necessary in the practice of which has ultimately brought about the dental specialty which, however, can no longer be divorced from its scientific basis. None the less for a long time there continued to exist as direct descendants of the Barber-Surgeons numerous artisans engaged in the empirical practice of dentistry fostered and sustained by the apprenticeship system, which up till 1840 was the only means of learning the art and handicraft of dental surgery. Representatives of both these classes were to be found in America at the time of the Revolution (1776). Memorable amongst these are the names of John Wooffendale (1766)



from Liverpool, James Gardette, a French Physician and Surgeon (1778), and Joseph Lemaire, a French dentist (1781), whose pupil Josiah Flagg was, probably, the first American dentist, whose followers now number upwards of 30,000.

In June, 1839, the first dental periodical in the world—*The American Journal of Dental Science*—since followed by nothing short of a *Cosmos*, was established; and in November, 1840, the pioneer dental college was founded under the title of the Baltimore College of Dental Surgery. These two events largely account for the fact that the greatest strides and the highest achievements of the science and art of dentistry have been accomplished on this side of the water, and justify the boast which, in its own native speech, truthfully affirms that "America leads the world." May I be permitted to add that herein the Royal College of Dental Surgeons of Ontario is, if the Governor-General's Body Guard will lend its motto for the moment, *Nulli Secundus*?

Let me turn for one moment, for I have not more, being reluctantly compelled to run away to an important faculty meeting across the way (or "in another place"), and so to miss the address of the learned Chancellor of McMaster, which I know you are awaiting with politely sustained patience amid expectancy, to make a cursory acknowledgment of the debt of general surgery to your specialty. But I must remark in the first place that your specialty has of late not only made broad its phylacteries, but also extended its boundaries to include the mouth and jaws, and to some extent with advantage to both. And moreover the dentist, since a periodic inspection of the mouth and its natural or artificial dentures has become a wholesome routine and convention of modern society, is often the first to find evidence of depraved constitutional states and empoisonments and to suggest the need of medical attention and "the stitch in time." The general profession has been far too long in recognizing the teeth as septichodes, to use Robert Barnes's word, or avenues of infection; and the problem of many a medical and surgical case has been solved by the intervention of the dentist. In the treatment of bone cavities and diseases the surgeon has learned much, and has yet much to learn, from his brother of the oral furrow; and the mechanical ingenuity and inventive genius displayed by the latter in the devising and construction of the various instruments of his craft, from the dental engine down, puts us to shame.



The methods of drying and disinfecting cavities, and the application of chemistry to their elimination or fulfilment, are crowded with suggestive points for our emulation and adoption.

But, above all, the debt of general surgery and of humanity at large to dentists, is involved in the gift of Anaesthesia, for we must never forget that, although Sir Humphrey Davy described the effects of nitrous oxide gas upon himself in 1800, it was reserved for a dentist, Horace Wells, first to demonstrate in December, 1844, the practical application of this boonful anodyne in robbing surgical intervention of its terror and its pain, and for W. T. G. Morton, another Massachusetts dentist, in September, 1846, to definitely establish it in practice as the most beneficent discovery in the annals of human history.

A word in conclusion of an admonitory kind, without which my duty to Alma Mater would not be wholly done!

To-day the University commits her name and fame into your keeping! Guard them jealously and well. Keep them holy and undefiled and unspotted from the world; ever remembering that whatever comes to you of credit and renown reflects these also upon your Alma Mater, and that your discredit or dishonour inevitably drags Her laurels in the dust. Which may the fates forefend!

Henry Newbolt in his Clifton Chapel wrote some noble lines which I am very fond of quoting on these occasions, and since my opportunities of addressing you are "like angels' visits," bear with me while I give them to you with my benediction:

"My sons, the oath is yours: the end  
Is His, Who built the world of strife,  
Who gave His children Pain for friend,  
And Death for surest hope of life.  
To-day and here the fight's begun,  
Of the great fellowship you're free;  
Henceforth the school and you are one,  
And what You are, the race shall be.  
God send you fortune!"

In a more ancient, time-honoured formulary,  
In Nomine Domini, Prosit! Valet!

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## **“Fletcherism.” Is it Right or Wrong?**

**G**EORGE M. NILES, M.D., writing in a recent issue of the *Journal of the American Medical Association* on the subject of “The Philosophy of Mastication,” takes a strong position in opposition to so-called Fletcherism.

The writer, while admitting that too rapid eating is a frequent fault, does not admit that slow, deliberate and systematic mastication is a *sine qua non* for health in every individual irrespective of temperament or station in life; nor does he believe it conducive to the best work of the digestive organs that a hard-and-fast rule be laid down regardless of the pleasure of the masticator.

Dr. Niles claims that mastication is but a preliminary act, and that its success depends upon something more than its mechanic and chemie aspects. He refers to the temperament of the individual as guiding the question of slow or rapid mastication, and refers to the potency of the psychic factors involved as being more and more recognized.

To quote: “When an appetizing meal is placed attractively before a hungry diner, both the eyes and the olfactory set in motion the preliminaries to the digestion of that meal. As each mouthful is received by the waiting gustatory tract, it is chewed and insalivated just enough to promote easy deglutition, and to allow its savory taste and aroma to be thoroughly appreciated. In the meanwhile numerous messages are being sent to the stomach, pancreas and other organs concerned, informing them in language perfectly intelligible how much and what kind of aliment is being sent them to digest. Should the messages be of cheerful import, these organs set to their tasks with alacrity, performing them with such ease and despatch that the fortunate owner need not know that he even owns a stomach.

“On the other hand, should the same meal be taken with severe gastronomic contemplation, and with arduous and lengthy mastication, the message may be ‘flashed’ to the same waiting organs: ‘Your master has lost confidence in you, the mouth and teeth will take over the most of your former duties, and hereafter you will be under constant mental surveillance.’ It is easily understood that under such conditions digestion is performed in a halting, complaining and unsatisfactory manner, and well may we say that ‘the last state of that man is worse than the first.’”

## *Investments for the Dentist.\**

By JOHN W. VAN ALLEN, COUNSELLOR, BUFFALO.

I HAVE been waiting, since my first experience with a member of your profession, for the opportunity to in some way inflict as painful a punishment in return. The duty of listening to your guest is such that I have no doubt that your agonies, during the time while I have the floor, will at least equal in intensity a portion of the pains which I have heretofore suffered from your hands.

My endeavors to communicate with you heretofore, hampered by large tympanums placed at close contact with the pallet, have neither been inspiring nor likely to have been attended with any great tranquility of mind or of matter.

For some reason or other it has been deemed quite proper to consider the members of the dental profession as active buyers of mining, promotion and other alluring stocks, calculated to sufficiently remunerate the seller, but in most instances leaving the patient in a more or less exhausted state financially or otherwise.

This difference, however, is to be noted between extraction by you and extraction by professional promoters, that whereas yours is accompanied by acute and immediate pain, theirs, by the use of a sweet and honeyed song at the time, defer the pain until you have discovered the treason some time later.

I suppose, in endeavoring to pay you your just deserts, it would be entirely in order for me to ask those who are owners of mining stocks to rise and signify that fact; but on second thought it hardly seems necessary to go through such a useless and perfunctory exercise.

I interpret my invitation to come here to-night as a sort of index that the beliefs which the members of your profession have heretofore held in the matter of making investments have, in some manner, become shaken, and that you desire—in fact, demand—that I shall in some way indicate to you what, in my experience, would be a sensible and conservative way to utilize the few shekels which a professional

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\*Read before the Eighth District Dental Society and Buffalo Dental Association, January, 1913.

man is able to reduce to possession and retain a sufficiently long time to give us the satisfaction of believing that we may consider them available for investment.

#### LIFE INSURANCE.

The necessary education of a professional man to-day is fraught with so much of expense that upon the beginning of his career he is likely to have incurred obligations, the payment of which ought, in some manner, to be assured in the event of his sudden demise. To this end a carefully selected life insurance policy covering the amount of his obligations is probably the least expensive—the premiums being payable in instalments—of any form of guarantee against loss.

While not generally practised, I am an earnest advocate of the insuring of one's life to his estate in a sum equal at all times to the amount of any obligations by notes, mortgages, contracts or otherwise outstanding at any time.

When, during the course of your professional life, you have been able to capture and to accumulate a family, their well-being, in case of your death, should be safeguarded by further insurance, even though you may have among your properties stocks, bonds or other securities which would be valuable assets in case of death. The reason for this is more apparent when you consider that estates cannot be closed ordinarily within a period of one year, and during that time stocks, bonds or securities might have to be sold at a sacrifice in order to provide actual cash for living expenses to the members of your family, so suddenly deprived of the cash producer. The life insurance in this case provides practically immediate cash available to your wife or family, and it should be payable direct to them, with which to pay expenses until an opportunity has arrived either to sell your securities at good advantage or to readjust themselves to the changed conditions brought about by your death.

#### SAVINGS BANKS.

Under the laws of the State of New York, and, in fact, under the laws of practically all of the States, savings banks are permitted to invest only in the most conservative securities. When you deposit your money in these institutions you receive, at least in this city, interest hereon at the rate of 4 per cent. per annum. The institution takes your funds and invests them for you in conservative securities, generally receiving an income greater than 4 per cent., the difference in the amount paid you as interest and the amount



received from the security as interest representing the cost of operating the bank. In other words, the bank makes your investments for you, charging as its commission or services the difference between what you get and what it gets.

To a man unacquainted with securities in general, and to a limited amount, it is generally wiser to pay savings bank experts this commission than to endeavor to make the selections of securities himself.

#### BONDS.

An income greater than sufficient to pay living and business expenses, insurance premiums and a savings bank deposit may, with judicious handling, be invested in approved stocks and bonds, yielding a much higher interest income than savings bank interest. If, for instance, after making a careful study of the securities which savings banks purchase, you are able to select good securities which those banks would purchase for themselves, you will be able to save the amount which you would pay for their services, thus securing, instead of 4 per cent., probably between 4 and 5 per cent., and if by mortgages on real estate perhaps 6 per cent. annually.

There are good bonds which yield a fair rate of interest and have a general market where they can be readily sold, which do not come strictly under the head of savings bank investments, although they are practically as safe; and careful inquiries among investment bankers will usually disclose such bonds for sale.

#### STOCKS.

Stocks at the best are more or less speculative, dependent largely upon the character of the business in which the company issuing them is engaged, and to an equally great or greater extent upon the management and control of the business. In order to make them fairly conservative, there should be in the company, in addition to assets equal to all of the current debts, mortgage and bond obligations, sufficient assets to constitute a fair proportion of the par value of the stock, and an earning capacity in all of the assets together, taken as a unit, to meet all charges and yield a fair dividend to the stockholders.

Of course, preferred stock is more safeguarded than common stock generally, both as to distribution of principal in case of dissolution and as to the payment of regular dividends before any dividends are paid upon the common

stock. It must be remembered, however, that preferred stocks usually carry only limited dividends, while common stock ordinarily pays dividends equal to the net earnings after paying expenses and other obligations, including the stated dividends on the preferred stock, and the amount of these, of course, depends again upon the earning capacity of the assets as a unit and the character of the management.

#### CONCLUSIONS.

I believe that, based upon a modest income as a start and gradually increasing as the years go by, the accumulated income of professional men should be invested about as follows:

1. Life insurance payable to your estate, equal at all times to the amount of your financial obligations.
2. Life insurance payable to your family sufficient to provide them with ready cash in case of death, and for a sufficiently long time thereafter to readjust themselves to new conditions and realize to the most advantage on other securities which you have accumulated during your lifetime.
3. A moderate savings bank account.
4. Approved bonds with a wide market, yielding a fair income.
5. Preferred stocks issued against assets at least double the amount of the par value of the amount of such stock issued, in a company whose annual net profits are equal or greater than twice the amount of the required preferred stock dividends.
6. Common stocks with a fairly wide market in companies whose earning capacity for a series of years, and the payment of dividends during that time, warrants the belief of safety of principal and continuity of dividend payments.
7. When you have a fair amount of property represented in the foregoing investments, then certain not too highly speculative transactions may be indulged in with that surplus, your situation being such at the time that a good sized estate will not be prejudiced by the losses which you make in endeavoring to make large profits by taking long chances.

I realize that I can tell you nothing new about investments, nor have I attempted to do so; but if the result has been to have given you an opportunity to analyze your own conditions in investment matters, and to revise any shortcomings therein, I shall be content.

## ***Modern Dentistry in China.***

BY A. W. LINDSAY, D.D.S., CHENG TU SZE CHUAN,  
WEST CHINA.

THE Dental Department of the Canadian Methodist Church in the Province of Sze Chuan, China, is unique in being the pioneer and as yet the only Department of Dentistry under a Mission Board in that country.

We are all acquainted with the part that medicine has played in mission work. We know it has in so many places broken down the prejudices of the people and made it possible through the healing of the physical man to talk to them of the spiritual. Dentistry should also assert, and is asserting, its right to be a factor in this great undertaking of the evangelization of the world. It is my purpose in this paper to give but a short sketch of the main outline of our work, a few words about the country and our Dental Department.

You are probably aware that on the coast of China there are some numbers of American and European dentists as well as a few Chinese and Japanese graduates of American and Japanese schools. These men are in what are termed treaty-ports, that is, cities opened to foreign trade. Such places as Shanghai, Nanking, Hankow, Tiensien, Chefoo and Peking. To these places we must add the British colonies of Hong Kong, Wei Hai Wei; also those of France, Germany, etc., and others. Though all these cities and colonies have dentists, as yet dentistry has made but little impression on China. There are no dental societies or dental schools, and to fully realize the situation one has but to imagine what the condition would be if Canada had all her dentists situated in Nova Scotia and there were but few miles of railroads in the country. China is larger than Canada and Alaska together, has almost every variety of climate, and a population three times as large as Canada and the United States. Still one can readily believe that China needs the services of the dental profession, and with the great awakening in that country to Western methods and thought, that dentistry will be demanded in the near future. To-day she needs men who are in sympathy with her progress and uplift. She needs dental literature and

schools to prepare for the day that is coming. This being so, who is more likely and capable of giving the education necessary than the church which has been the means of producing her awakening.

Our mission field is in the Far West; it borders on Tibet, and if it were necessary to take a trip to the nearest dentist a journey of some 1,500 miles would have to be taken. Some three months for the round trip; not in railroad coaches, but by sedan chair and native junk over the dangerous and tiresome miles. The Province of Sze Chuan is the banner province of China. It is the largest, about the size of France, has the greatest population, some 60,000,000 people, and is the richest agriculturally, and probably also in its mineral resources. When the time comes for this province to give up this hidden wealth the world will add to its supply of gold and silver, coal and iron, copper and lead, and many other minerals to an almost unlimited amount. The Chinese as yet have but scratched the surface of the ground. They now await the knowledge, enterprise and moneyed interests of the West to help them to dig up these unbounded riches. I have no doubt but that Canadian money will be used in this production of wealth. It but awaits the right moment and opportunity. But to-day Canada has the privilege to mould and develop the people of that province, and is doing so through the Canadian Methodist Mission.

These people are anxious to know more of the world that has been shut out from them for so long; they wish to enter into our Western thought; they are wondering if their old ideas, customs and religions are satisfactory. Many are becoming agnostics and atheists as they realize that the old is not always the truth. The idol is being cast out. What shall they receive in its place? The missions are offering them education in all the sciences and arts of the West; but with them all they give them the Christian ideal of life. The brotherhood of man and the Fatherhood of God. In this great work of the missions dentistry will have and has an important part to play.

Our Dental Department was started five years ago in the capital of the province. This city has a population of about half a million natives, besides some two hundred odd Europeans, Americans and Japanese. It is in this city that both the government and missions have their educational headquarters.



The problem of opening a dental practice in Chengtu were of quite a different nature to those you encounter in Canada. To give you a hint of the difficulties and conditions under which I had to work, I will give you a description of my first laboratory. The building could hardly have had the status of a third-rate woodshed in Canada. The floor was of mud, the rafters, for there was no ceiling, were as black as they could be made by years of smoke from an open fire. The roof was of earthen tile, with its many cracks and crevices. The front of the building was covered with a large paper lattice window. The rear had a wall reaching part way to the roof, dividing the room from a noisy Chinese compound which held some fifty or sixty people who had constant bickerings and family disputes. One end of the room was occupied with the household supply of coal, wood and shavings; the other was filled with the Chinese chairs, tables and the like that we had no use for in our rented Chinese house. It could not be said that the surroundings would inspire good work. Fortunately we did not stay here long. During the next year we moved to more pleasant quarters.

Now, to impress you with the rapid growth of the work, I wish to say a few words about our new dental building erected during the year 1911. It contains three operating rooms, a large laboratory, an office for the staff, and two waiting rooms, one intended for women and the other for men, this being a necessity in accordance with Chinese custom. The rooms are all well lighted and large. We have installed the Kewanee water system, the Sims water motors and compressed air. We hope in the near future to have electricity also.

During the year 1910 Dr. J. E. Thompson, a graduate of the R. C. D. S., arrived in Chengtu. He came to enter Y. M. C. A. work under our mission, but before he had finished his language study he was transferred to the Dental Department, both because of the growth of the work and the immediate need of another man.

We expect in the near future to open a dental faculty in connection with the Union University of West China. Here we hope to train some of the brightest and best young men to take their place in the dental profession and to send them to their work with the right perspective of life.

To make it possible for us to do this work we need more men to help us. We trust that our Canadian dental colleges will send us these. Surely our young men can find no vocation which challenges the best and highest in them as does dentistry in missions.

## ***Dental Appointments by the Department of Health, New York.***

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THE appointment of dentists by the New York Health Department, to serve on fixed salaries in properly equipped public clinics, is a good beginning in the tremendous work of organizing dental service for the poor of a great city. The problem is of almost overwhelming magnitude, from the present outlook, but it is gratifying to note the growing willingness and desire on the part of the authorities to co-operate with the dental profession in advancing oral hygiene.

Following the recent recommendation of Commissioner Lederle, twelve dentists have been appointed and four or five clinics established. We are largely indebted for this important action to the consistent efforts of Dr. Herbert L. Wheeler, who has worked vigorously for many years in the establishment of dental clinics in this city. We have Dr. Wheeler's authority for the following particulars concerning the appointments mentioned:

"They (the twelve appointees) are apportioned as follows: Ten in the Division of Child Hygiene. These are the ones that are to man the clinics, which clinics are provided for school children under fourteen years of age, who are very poor. Eleven of these receive \$1,200 per year, and one who has charge of the services receives \$1,500 a year. Great care has been exercised in choosing young men, and the efficiency and usefulness of the service bids fair to be exceedingly high. The other two dentists are attached to the Division of Communicable Diseases. One spends one day a week at the Otisville Preventorium and receives \$400 a year. The other one examines the mouths of all patients who apply to the Tuberculosis clinic for treatment by the city, and has power to order any necessary work done, either operative or prosthetic, that is needed to bring the masticatory apparatus of the patient up to a proper standard, and to see that the mouth is put in a condition where it will not be a menace, by being a source of infection. His salary is also \$1,200 a year.

" . . . I feel that the dental profession and the public are entitled to congratulation. Not only do the peo-

ple of New York owe a debt of gratitude to Doctor Lederle, they also are indebted to Mayor Gaynor, the Board of Estimate and Apportionment, and the Board of Aldermen, besides other officials of the Board of Health."

This is concrete, important work. We congratulate ourselves, the public and the municipal authorities upon this somewhat tardy awakening.—*Journal of Allied Societies.*

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### ***Central Ontario Dental Society.***

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The C. O. D. S. met in Toronto on the evening of June 27th and discussed many questions of interest to the members and the dental profession. Meetings of this character should be encouraged as tending to develop a more friendly feeling among dental practitioners and a more active co-operation with one another.

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### ***Results of Institutional Dentistry.***

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BY FREDERICK A. KEYES, D.M.D., BOSTON, MASS.

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**A**T the present day there is great agitation by medical and dental men for the improvement of the oral conditions existing among the Public School children. The dental profession has always been cognizant of the importance of oral cleanliness in relation to the health of the human body, but a few medical men with whom I have talked seemed rather skeptical of its importance. I have therefore gathered together carefully these statistics, showing the relation of the condition of the mouth to infectious diseases.

I hope that this evidence of the elimination of infectious disease by having the mouth and teeth treated will arouse the medical profession to the great importance of oral sepsis. Even though the results obtained by two years' dental treatment may seem merely a coincidence, I am confident that such is not the case, and that results equally good are being obtained by all dentists treating adolescent children.

In November, 1910, I was requested by Mother Rose, Superior of St. Vincents Orphan Asylum, Camden Street, Boston, to visit the institution to see what steps would be necessary to establish a dental infirmary for the care of the children's teeth. Within a week a fully equipped infirmary was established on the third floor of the home.

\* \* \* \* \*

The following interesting statistics show the relation of oral prophylaxis to infectious diseases:

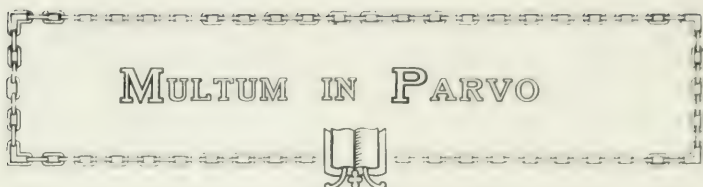
RECORD IN REGARD TO INFECTIOUS DISEASES.

			Nov., 1909	April, 1910	Nov., 1910
	1907	1908	Nov., 1909	April, 1910	May, 1911
	1908	1909	1910	1911	1912
Diphtheria .....	6	2	1	0	0
Mumps .....	8	3	10	4	0
Scarlet fever .....	17	8	12	8	0
Pneumonia .....	3	5	4	6	0
Measles .....	24	50	40	25	0
Tonsilitis .....	19	16	8	3	0
Whooping cough .....	7	2	2	0	0
Chicken pox .....	15	17	10	6	0
Typhoid .....	0	0	0	0	0
Croup .....	4	0	0	0	0
Spinal meningitis .....	0	0	0	0	0
Scarletina .....	..	..	0	0	0
Bright's (acute) .....	..	..	..	..	0
Hemorrhage .....	..	..	..	..	0
Tuberculosis of eye...	..	..	..	..	1
Tuberculosis of lungs..	..	..	..	..	1
	103	103	87	52	2

In the years 1905-1906 the home was in quarantine for over three months—an epidemic of scarlet fever of over 75 cases.

Is this absolute elimination of disease for a period of twelve months a coincidence? It may be so. Other factors may have brought about this remarkable condition. But certainly no such condition ever existed in St. Vincent's Asylum prior to the installation of a dental infirmary. Of course, two years more will produce more conclusive evidence, although one may see even now that the benefit of dental work is not over-estimated, as far as the elimination of infectious diseases is concerned.—*Dental Register*.





This Department is Edited by C. A. KENNEDY, D.D.S.

Librarian, Royal College of Dental Surgeons of Ontario

*Helpful Practical Suggestions for publication, sent in by members of the Profession, will be greatly appreciated by this Department.*

*Address. C. A. KENNEDY, D.D.S., 2 College Street, Toronto.*

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SEPARATING FLUID FOR PLASTER IMPRESSIONS.—An easily made separating fluid for plaster work can be prepared by mixing together three parts by weight of castor oil with one of alcohol, and adding sufficient of any aniline dye, soluble in alcohol, to give a readily recognizable color. This solution is ready for use as soon as mixed.

TO CONTROL ABNORMAL FLOW OF SALIVA.—We occasionally meet with patients who have such an abnormal secretion of saliva that none of the ordinary methods of keeping the mouth dry are of any avail. In such a case, a previous dose of 1-120 grain of Atrophinsulphate taken by the patient about three-quarters of an hour before taking the seat in the dental chair will provide us with a mouth considerably drier than usual, though not so dry as to cause the patient any discomfort. The effect of the drug lasts from four to five hours.—*Edwards' Quarterly.*


TO HOLD GOLD INLAYS TO GRIND AND POLISH.—Many good inlays have been spoiled in grinding or polishing them, especially the small inlays. It is difficult to hold a small inlay against a revolving disc without doing some damage to the margins. I made a cylinder out of German silver five-eighths inch in diameter and one inch high, capped one end. Fill up this cylinder with dental lac, forming a convexity at surface. Heat dental lac, press in the inlay, exposing surface to be ground and polished. Fred F. Schwartz, Northwestern University Dental School, *Dental Review.*

TO DIAGNOSE "PULP STONE."—The symptoms of the presence of one of these in the pulp chamber in some respects closely resemble the indications of periostitis, but attention to the following points will enable us to make a correct diagnosis: (1) Any exertion which increases the heart's action aggravates the pain. (2) Tapping the tooth with an instrument gives the same reaction as in the early stages of periostitis. (3) *Sudden* closure of the teeth causes pain as in periostitis, *but* if the teeth be closed *gently* they can then be bitten together as hard as possible without any pain being felt. (4) Pressing the tooth laterally does not cause pain. The last two tests are quite diagnostic that we have trouble inside the tooth in the form of one or more pulp stones, and not an external lesion.—*Edwards' Quarterly*.

REPAIRING CROWN.—To repair a hole in a gold crown, which is made in removing crown from the root, take some filling gold and amalgamate it with mercury, then pack it in and around the hole, afterwards holding the crown in a bunsen flame to drive off the mercury. Care must be taken not to inhale the mercurial fumes. Then place a small piece of solder on filling gold and fuse in bunsen flame.—G. H. Henderson, *Dental Review*.

INVESTMENT MATERIAL.—It is composed of four parts by weight of finely powdered silix and one part of French's impression plaster. These ingredients must be thoroughly mixed by repeated siftings. I sift them twenty to thirty times through a fine sieve and make up enough at one time to last several months, as the longer the mixture is kept the better it is, provided it is stored in a dry, warm place in *wooden boxes*, the wood tending to absorb any slight moisture it may contain. Too much importance cannot be attached to the mixing and curing of this investment material.—C. E. Tolbert, *Dental Summary*.

ETCHING GOLD INLAYS TO OBTAIN BETTER CEMENT ADHESION.—The part of the inlay to which the cement is to adhere is dipped in mercury, the surface being evenly coated by using a moist piece of cotton and spreading the mercury around. When this has been accomplished the inlay is inverted over an alcohol flame and the mercury is slowly driven off, leaving the rough surface for the cement to adhere to.—R. I. Lewis, *Dental Review*.



## PERSONAL ITEMS.

(We desire to record our appreciation of the response received to our request of last month that Personal Items be sent in for publication in "Oral Health," and take this method of expressing our thanks to those who responded so generously. It begins to look as though the **PERSONAL PAGE** will prove one of the most popular in the magazine, and we hope the members and friends of the dental profession will feel free to send along, from time to time, personal items of general interest for publication.—Editor.)

**D**R. T. R. DAVIS, of Berlin, is opening an office on Roncesvalles Ave., Toronto.

Dr. Beatty, of Arcola, is opening an office in North Battleford, Sask.

Dr. Frank Sandercock, of Calgary, is visiting his old home in Woodstock.

Dr. W. W. Patterson, of Paris, and Dr. J. B. Lundy, of Brantford, are officers in the Brant Dragoons and are attending the annual camp at Niagara.

Dr. Devine has secured the practice of Dr. Arthur Weldon, of Beaverton. Dr. Weldon is taking up practice in the city of Toronto.

Dr. Robertson, of Collingwood, was married on June 5th and is taking an extended trip in the United States. Congratulations!

Dr. D. R. McLean, of Stewartdale, N.S., and Dr. C. E. McLaughlin, of Annapolis, N.S., wrote the D. D. C. examinations during the first week of June at Halifax.

Dr. E. E. Bruce, of Kincardine, is moving to Toronto.

Dr. A. H. Tanner, formerly of Rossland, B.C., has opened an office in the Campbell Building, Victoria.

Dr. W. H. Thompson, of Kamloops, is moving to Vancouver, and will confine his practice largely to oral surgery. Dr. Thompson has secured an office in the Birks Building.

The examinations of the British Columbia Dental Board of Examiners were held on June 16 in Vancouver.

Dr. A. A. Garfat is taking over Dr. L. R. Coles' practice in the Somerset Block, Winnipeg.

Dr. B. E. Brownlee, of Mount Forest, Ont., has opened an office in the Boyd Block, Winnipeg, and will confine his practice to orthodontia and X-ray work.

Dr. Mills, of Southampton, is taking a month's vacation before leaving on a trip to the coast. Dr. Mills is planning to open an office in some Western city, having disposed of his practice in Southampton to Dr. G. W. Harris, who graduated this year from the R. C. D. S.

Dr. C. Little, who has been in Carberry, Man., has purchased Dr. Tweedle's practice in the city of Calgary.

Dr. Healy, of Toronto, has opened an office in the Edge Block, Calgary.

Dr. H. L. Robb, of Calgary, is leaving about July 1st for an extended vacation in the East, and has arranged with Dr. Trelford to look after his practice until his return. Dr. John W. Clay is also planning a trip East in July.

Dr. J. P. Raleigh, of Winnipeg, has secured new offices in the Kennedy Block, on Portage Ave.

Dr. H. Ross, of North Battleford, Sask., has left on a three months trip through England and the Continent.

The Boyd Block in Winnipeg is becoming quite a mecca for dentists, the following men having located in this building: Drs. W. F. Taylor, J. F. Taylor, Jr., B. McKenty, K. C. Campbell, F. Jackson, F. D. McGratton, W. R. Parson, C. H. Weagant, and B. E. Brownlee.

Dr. C. E. Vandervoort is opening an office in Saskatoon about the 1st of July.

Dr. Richardson, of Ottawa, has returned from a trip through the Canadian West.

The Temple-Pattison Co. have removed into fine new quarters in the London Building, Vancouver.



Dr. J. E. Wilkinson, of Winnipeg, is now practising in the Carlton Block. Dr. G. J. and Arthur Clint, who for many years practised on Main St., are removing into new quarters in the Lindsay Block. Dr. F. W. Fell is locating in a new office in the Syndicate Block, 222 Portage Ave., Winnipeg.

We are sorry to report that Dr. R. G. Thompson, of Woodstock, N.B., was recently bereaved in the loss of his eldest daughter.

Dr. A. D. A. Mason and Dr. C. A. Corrigan, lieutenant and captain respectively in the Army Service Corps, have been attending camp at Niagara during the past two weeks.

Congratulations are in order to Dr. T. A. Maxwell, of Calgary, in the birth of a daughter. Dr. Maxwell practised for a number of years in Toronto and was a demonstrator in the R. C. D. S.

Dr. F. L. Downing, Renfrew, was married on 11th June, 1913, and will be absent on a post-nuptial trip for some weeks. Heartiest congratulations!

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### ***Union Meeting of the Nova Scotia, New Brunswick and Prince Edward Island Dental Societies.***

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A union meeting of these Societies is to be held in the City of Moncton on the 8th, 9th and 10th of July, 1913.

Drs. A. E. Webster and Wallace Seecombe, of Toronto, have been invited to attend the meeting and present papers upon subjects of general interest.

An excellent programme of papers, discussions, clinics and exhibits is being arranged, and a most profitable convention is promised.

## ORAL HEALTH.

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Vol. 3

TORONTO, JULY, 1913.

NO. 7

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## EDITORIAL.

### *The Ontario Convention.*

THE Provincial Convention for 1913 is now a matter of history. Its essays, discussions and other features are in the hands of the Editorial Committee and will, in due time, be placed at the disposal of the members throughout the Province. It is not the intention just here to elaborate on the value and scope of the programme presented at the recent meeting. However, as the writer watched with some active interest both the preparation for and the conducting of the recent convention, one thing was clearly evident—that, although the convention is provincial in name and generally draws men to its meetings from every part of the Province, yet it is apparently in danger of becoming too local in its character and influence. A convention that is truly provincial must not only be able to register members from every part of the Province, but, what is of more vital importance, its yearly programme

should carry the names of men from even the remotest portions of that Province.

Then, and then only, will such far-removed member consider themselves real shareholders in such an organization and anxious not only to attend the meetings, but equally anxious for its ultimate success.

Has such a wide-spread interest been manifested in connection with the recent meetings of the Ontario Dental Society? Ask the Programme Committee. Ask the Supervisor of Clinics. Or, if you will, glance over the programme of the recent conventions and you will find complete evidence of the fact that, year after year, the same essayists and clinicians, rather than allow the programme to suffer, permit their names to appear on the list. It was very noticeable that the list of clinicians for the recent convention was made up almost entirely from one section of the Province. Such a condition is bad, very bad, for the Society and tends to narrow its influence.

What is the remedy? A question that the Programme Committee for 1914 ought to seriously ask itself. It may not be able to effect a complete cure during its short term of office, but at least it can help turn the tide.

The disease has been gradually gaining a foothold and will require radical and persistent treatment. The district representatives can do much. They are in close touch with the members of their own constituency and ought to be a real help to the Programme Committee of 1914.

But we ought to go further and adopt some stronger measure to ensure that each district contribute its own legitimate share to the yearly programme. Instead of one representative for each district, let there be three. Those three should not only be held responsible for the district which they represent, but should be asked to present a written report to the convention giving in detail their efforts to secure their proper share of material for the programme.

It will pay to take time to discuss these reports, and let me suggest it might be wise even to go further and offer some inducement in the shape of a banner or some such trophy to be given to the district giving the best support to the convention for that particular year.

What is the Program Committee for 1914 going to do about it?

R. G. McL.

## **Oral Hygiene Reports.**

### *Pittsburg, Pa.*

At the convention of the Odontological Society of Western Pennsylvania much time was spent in a discussion of the subject of oral hygiene and the examination of school children's teeth. It was urged that there should be some form of supervision for the removal of temporary teeth in the case of all persons under legal age. Dr. George Wood Clapp, editor of *Dental Digest*, was present and read a paper on the subject "Face to Face with the Necessities of Life."

### *St. John, N.B.*

*The St. John Daily Press* is taking a very advanced position in the question of medical and dental inspection of schools and advocating regular examination and treatment of the children as well as the appointment of a staff of school nurses.

### *National Oral Hygiene Committee.*

In response to an invitation issued by the committee organizing the fourth International Congress on School Hygiene, the various dental associations of America are taking an active part in the plans for this health congress, which will be held at Buffalo the last week in August for the purpose of considering all questions relating to the health and efficiency of school children.

Dental inspection in the public schools is one of the measures advocated by many of the leading dental associations of the country. Dental clinics have already been established in a number of the prominent cities, but the need of extending this work is clearly apparent, according to statistics furnished by health officers as well as school officials. A current bulletin issued by the New York City Department of Health points out the conditions in that city.

Since the department inaugurated the physical examination of children in public schools, according to the bulletin, it has been increasingly evident that dental defects are not only more prevalent than other physical defects, but that the facilities for free dental treatment are absolutely inadequate to provide any relief for the situation. Approximately 60 per cent. of all the children examined have been



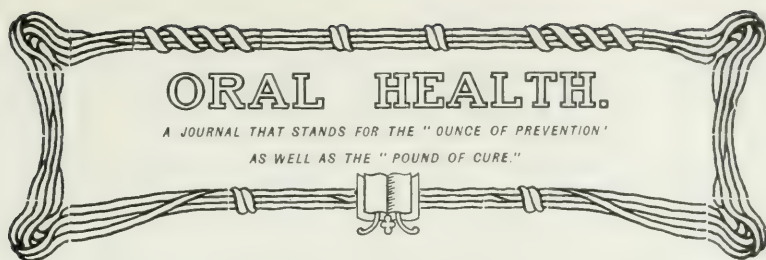
found to have decayed teeth. In other words, there are to-day 420,000 public school children in New York City alone in urgent need of dental treatment—statistics which seem to bear on the statement made by Dr. Luther H. Gulick, who estimated that 40 per cent. of the absences in New York City were due to toothache.

Similar conditions showing the need of dental treatment are reported throughout the country, and with a view of having these conditions remedied, the various dental associations are now lending their aid in behalf of the Buffalo congress. A special session will be devoted at Buffalo to a discussion on mouth hygiene, dental clinics and other matters relating to schoolboys and their toothaches.

The committee in charge of the mouth hygiene division of the Buffalo congress is made up as follows: Dr. W. G. Ebersole, secretary and treasurer of the National Mouth Hygiene Association, Cleveland, Ohio; Dr. Alfred C. Fones, chairman of the Oral Hygiene Committee of the National Dental Association, Bridgeport, Conn.; Dr. J. O. McCall, chairman of the National Committee, representing the National Mouth Hygiene Association, Buffalo, N.Y.; Dr. Henry H. Schuman, Chicago, Ill.; Dr. John P. Corley, Seewanee, Tenn.; Dr. T. W. McFadden, Wilkinsburg, Pa.; Dr. John H. London, Washington, D.C.; Dr. F. A. Ballachey, Buffalo, N.Y. This committee has secured the formation of sub-committees in the various States, and it is expected that all the leading cities will be represented on the dental programme at Buffalo the last week in August.

### ***Dental Society of Western Canada.***

The convention of the Society will be held in Calgary July 7th, 8th and 9th, 1913. Papers will be given by Dr. A. W. Thornton, of the Dental Department of McGill University, on "Crown and Bridge Work, Wise and Otherwise," and by Dr. Garrett Newkirk, of Pasadena, Cal., on "Pyorrhoea and Oral Hygiene." Many other clinics and papers by representative practitioners of Western Canada have been arranged, and a successful meeting is assured.



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VOL. 3.

TORONTO, AUGUST, 1913

No. 8

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## *The Status of Physiology and Hygiene in the Schools of Ontario.\**

BY JOHN DEARNESS, M.A., LONDON NORMAL SCHOOL.

**P**HYSIOLOGY and hygiene, if properly taught, has in a greater or less degree every claim to a place on the Public School and High School courses of study possessed by any other subject. Potentially it has high disciplinary, cultural and moral values. Herbert Spencer's argument in his classic essay on the values of knowledge, that on the ground of utility or useful knowledge it deserves the very highest place, has never been refuted.

Many states and provinces give the subject under notice conspicuous attention in both their Public and High School courses of study, but Ontario has nothing to be proud of in this regard. She gives it a name and a narrow place in the Public School, but not even a name nor an option in the High School.

Some years ago physiology and hygiene was a High School entrance examination subject. The cramming process that too generally passed muster for the teaching of it, and of which I had at the time the best of opportunity to judge, moved me to speak and vote for its removal from the list of examination subjects. My hope was that less ground covered in a more pedagogical manner and with a higher purpose would give better results. I believe that the status of the subject to day is lower than it was before it was re-

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\*Abstract of address delivered before the Physical Training and School Hygiene Section of the Ontario Educational Association.

moved from the examination list. Out of 138 young teachers in training, fresh from the High Schools, 17 of them averred that they had never had any instruction in the subject in either Public or High School, while the knowledge of the others might be compared to knowing only simple addition in a full course of arithmetic.

To illustrate: Typical answers received were that the use of oxygen in the body is to purify the blood, and that the waste matter of the cells is carried off through the intestine. The nature and function of lymph and the hygienic importance of the sixth year molar were altogether beyond them.

I do not propose to raise the question whether or not it is sufficient in the Public Schools to read some popular hygiene relating to sunshine, food, cleanliness, and infection; but I wish to emphasize as strongly as I can that even these lessons cannot be properly taught by teachers ignorant of elementary knowledge of anatomy and physiology.

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### ***The Need of an Institution for Dental Research.\****

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By C. N. JOHNSON, M.A., L.D.S., D.D.S., CHICAGO.

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THE intense interest manifest at the present time in the phenomena of cause and effect in all departments of science, has led to the establishment of institutions for original research where men of scientific tendencies may work out the various problems presented to the human family, unhampered by the stern necessity of striving each day for the wherewithal to keep body and soul together. To relieve a man who has a scientific trend of thought of all concern connected with his subsistence is to give free rein to his best energies in searching out the hidden phenomena which stand in the way of man's greatest happiness. It is an anomaly on our boasted civilization that to-day we know so little of many of the most serious problems which stand in the way of our welfare. In many of the

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\*Read before the Odontological Society of Chicago, February 11, 1913.

essentials of true happiness we are still groping blindly in the dark till we are sometimes prone to exclaim in the bitterness of our hearts, "How long, oh Lord, how long?"

It is amazing, when we stop to consider it, how much of our weal is bound up in what the world knows as pure science. Poetry has its place, and a very important one, in the scheme of our enjoyment; literature of all kinds is of the utmost importance; the arts are to be cultivated for their humanizing effect, and the softer graces of life must not be ignored. But above and beyond all these must come a scientific knowledge of this marvelous thing which we have come to know as our body.

Medical men are naturally giving their best energies to searching out the cause of disease. The fight between medicine and the diseases which decimate the human family has always been terribly pathetic, and to-day it is almost as pathetic as ever. We stand apparently in awe and well-nigh helpless in the presence of many of the afflictions of mankind. We have gone one step forward and only one—we hear to-day the distinction made between "Preventable" and other diseases. As if it were not yet an acknowledgement of our weakness to admit that all diseases are not preventable! Who knows that there is not in the alchemy of the future something which will render humanity immune to the terrible scourges which from time immemorial have done so much to depopulate the earth?

Fortunately for the possibilities of the future, scientists are doing much to-day for the welfare of mankind by searching out the causes and cures of many of the diseases which infest mankind. Everywhere scientific laboratories are being established for original research work, and some of these laboratories are accomplishing great things. The recent achievements of the Rockefeller Institute at New York are calling attention to the possibilities of such work, and, to go back a little further, the laboratories of Europe must not be overlooked. It was in the University of Berlin where our own Miller did so much to clear up the etiology of dental caries, and it is doubtful if he could have accomplished what he did without the facilities placed at his command, and without the scientific atmosphere in which he worked.

The first thing for us to consider at this time is the need of such work in dentistry, and the next is the most feasible



plan of carrying it out. As to the need there can be no question. To-day the practice of dentistry is assuming a different responsibility from what it ever did before. The significance of mouth hygiene is being impressed upon thinking people—both professional and lay—in a manner which makes it imperative that we know more about it. That the chief factor in many of the diseases which affect mankind relates to conditions in the mouth can be no longer doubted. This has been repeatedly pointed out by dental writers, and now the medical profession are awakening to the great evil which has been, and is being, wrought among humanity through neglect of oral conditions. In the light of what we now know there can be no longer doubt that many a life has been sacrificed at the altar of ignorance concerning the true significance of what oral hygiene means.

Dental disease is the most prevalent of all human ailments, and its very universality has obscured our vision too long to its real seriousness. What a difference it would make to the efficiency of the human race if all dental diseases could be prevented! And this really can be done by co-operation between the profession and the people. But of course this will not come about very soon. It is an exceedingly long journey to the goal of co-operation, and before this can be consummated it is necessary to educate the people as to what is involved in the question. But to go back of this and to work intelligently toward preventing these diseases we must first learn more of their etiology. We know but very little even yet about dental caries except that more than 90% of the people are affected by it. We know that an acid does the mischief and that micro-organisms produce the acid, but we do not know why it is that in two mouths, both of which show the presence of these micro-organisms, one will be immune and the other susceptible. Till we know this we cannot hope to prevent this disease.

What do we know about the causes lying back of erosion, or the real *modus operandi* of its progress? Almost nothing. What of pyorrhea alveolaris in its varying manifestations? Nothing except that it is rapidly becoming one of the most dreadful scourges which attack the structures surrounding the teeth, and cause their extensive loss. We are puttering, and ever puttering in our efforts to check decay after it has begun, and to cure pyorrhea when it has already sapped the foundation of the teeth. We are using our in-

genuity—an ingenuity not to be despised, either in frantic efforts to undo the harm that has been done. And let me add in doing this we are giving the very best service of which we are capable with our present facilities. Lacking the knowledge of what causes these diseases, we cannot be expected to do much toward preventing them. We have little need to blush for the character of our service to the people when all that we have learned relates only to repair and not to prevention.

But the time has come when a new obligation is being forced upon us. It is clearly our duty now, if it never was before, to institute a series of experiments with the aim of learning the causes of dental caries and the surest means of preventing them. The question is, how shall this be done? The first requirement is money, the next requirement is money, and the next is more money. I do not mean by this that vast sums are needed to carry on this work, but that it is folly for any investigator to start in without the assurance of financial support during an indefinite period. To do this movement justice, there should be an endowment suitable in size to sustain a laboratory of research permanently. To start it without adequate means to support it on a permanent basis is to waste so much energy. No man can do this work to advantage and earn his living practising his profession. He must be relieved of financial worry to gain the best results, and this must be a permanent instead of a temporary relief.

Logically this work should be undertaken by the government, but practically this is **not** feasible at the present time. Our government is not yet educated up to it. The government has only gone far enough to look after the welfare of hogs, and cattle, and sheep. It is absorbed with the problem of growing the best kinds of grain and fruits. It takes a vital interest in the health of domestic animals, and will aid a farmer most effectually in running down the causes of disease in his herds or flocks. This is done because these herds or flocks represent so much money and the government has learned the significant lesson that whatever is a saving to the individual is a saving to the community. It is perfectly proper and entirely commendable for the government to do these things. It is for the betterment of the state, and the nation, and the family.

But the government has one very important lesson to learn, viz., that the health of the people is of greater im-

portance than the health of its domestic animals, and that from a mere mercenary point of view, to say nothing of sentiment, it is a saving of dollars and cents to keep the people free from disease. Human health is the greatest asset any nation can have. It has been estimated by those who have studied the economic aspect of the case that the cost of disease each year among the people of this country alone runs into an enormous sum—up in the billions. In a recent number of the *Bulletin* issued by the Department of Health of Chicago the statement is made that “the sum of \$1,500,000,000 is a low estimate of the annual economic loss from preventable deaths.” The extravagance entailed in the high cost of living which we hear so much about to-day is as nothing compared with the extravagance of disease. It is the cruelest waste in this age of excessive wastefulness. If the government would spend one-half the sum which is wasted annually by disease in maintaining a department of health to teach and direct the people how to keep well, and then establish original research laboratories to seek out the causes and prevention of disease, it would be the most economical expenditure of money that could be devised.

But governments move slowly, and we must not hope at the present time to get much encouragement from the government in establishing research laboratories for the study of dental diseases. It is the history of all these movements that the initiative must be taken by individuals. What we need to-day is that some public-spirited individual shall build, equip and endow a research laboratory for the especial purpose of investigating dental diseases. There is no other disposition of money which could eventually result in greater benefit to the human family than this. The Forsyth brothers of Boston are causing to be built a memorial dental infirmary to cost a million dollars, and have pledged another million for its maintenance. This is for a double purpose—to give dental service to the poor children of Boston, and to educate the coming generations as to the significance and proper care of the teeth. When this movement was first started I wrote an editorial regarding it in which I stated that this action on the part of the Forsyth brothers would result in greater good to Boston than any other single philanthropy that could be mentioned, and as time goes on I am more than ever convinced that this is true. In Chicago we have gone at the problem of emergency

relief for the children of the poor in a different way. Recognizing the crying need for such work among our children, the Odontological Society several years ago, under the direction of Dr. Brophy, started a free dental infirmary in the Ninety-third Street School. Shortly after this the Chicago Dental Society took up the work. The Englewood Dental Society had previously begun to work along this line in conjunction with the United Charities of Chicago. It was soon found that voluntary service could not be relied on to maintain permanently a movement of this kind, and after three infirmaries had been started by the dental societies a halt was called on the equipment of any more by the present writer, who was chairman of the Public Service Commission having this work in hand, until such time as provision could be made for their maintenance. At this stage Mr. Julius Rosenwald, a man whose name will go down in history as one of the most practical philanthropists of his time, came to our assistance with an offer to equip six additional infirmaries, making ten in all, and to pay salaries to operators aggregating \$10,000 per year to keep them in operation. Thus in Chicago to-day we have ten dental infirmaries located in the public school buildings in different parts of the city where poor children can be cared for. The idea most prominent in the minds of all was the relief of suffering among the children, and this is an object worthy the consideration of every true philanthropist, but now that this movement is under way it is time that we turned our attention to a matter which is of really greater importance than this. It is a splendid thing to go out into the poorer districts of the city and relieve suffering, thereby increasing the efficiency of those whom we serve, but it is infinitely a higher mission for us to find out the causes of these diseases which we are to-day combating, to the end that we may ultimately be able to prevent them. The curing of a disease, as I have already pointed out, is a costly thing, and it savors of that kind of extravagance which is the most woeful of all because it is unnecessary. Not that we are at present able to escape it, not that we are falling short of doing all in our power with our present knowledge, but that the time has come in our evolution to higher and better things when our energies should be directed toward the prevention instead of the cure of disease.

And the sooner we are permitted to establish laboratories of original research the sooner will that consummation so devoutly to be wished be brought about. I would



that some of our wealthy men—men who are seeking unselfishly and generously to benefit the world—could be made to see the significance of this work. If they could understand as we to-day are beginning to understand the real value to the human race of mouth hygiene, there would be not only one but literally there would be dozens of them who would volunteer to finance laboratories to throw light on this important subject.

All honor to the Forsyths and to Rosenwald for what they have done. In each case they have builded better than they knew, and the world will remember them as among the foremost benefactors of their time. Who shall be the man or woman to go one step farther and provide the means whereby the profession may be enabled to prevent disease instead of groping hopelessly in the dark in many of its efforts to cure it? Such a man or such a woman will render a more signal service to humanity than the soldier who fights its battles or the statesman who directs its policies. The soldier or statesman may appeal to the passing wave of popularity, but the benefactor who contributes to the relief of human suffering adds a permanent page to the volume of the world's advancement.—*The Dental Review*.

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## A Dental Picnic.

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[Every influence that brings about a more cordial spirit of fraternity among dentists is helpful. Fraternity is frequently the most potent factor in a Dental Convention. During the summer months informal outings are of great help in getting the dentist better acquainted with his neighbor. The following report of a "Dental Picnic" is published in the hope that it may stimulate activity in other Dental Societies along similar lines.]

THE dentists of Toronto, with their wives, held their annual picnic at Long Branch on Tuesday afternoon, June 24th. No doubt the committee were influenced in their selection of this park by its convenience of access by trolley and automobile, but the deciding feature in its favor was probably the athletic field with the sloping grassy bank on one side, for when the dentists "picnic" they must have a ball game and a comfortable grand stand for the accommodation of lady enthusiasts.

The weather was the finest that June provides. The dentists and their ladies arrived in goodly numbers, quite a number making the trip by automobile. Soon a baseball

game was started, with Gus Kennedy and Ed Paul as captains. There was some slight delay in deciding upon an umpire, but by a process of elimination Fred Husband was made the unanimous choice of both teams, as Fred candidly admitted that he knew absolutely nothing of baseball as played under indoor baseball rules, and, therefore, would give his decisions without bias, prejudice or malice aforethought. Frawley and Paul were the opposing twirlers, and each had a style all his own. Frawley's strong point was speed; being an old curler, it was easy for him to handle such a light thing as an indoor baseball. When he hurled the sphere to the batter his mighty thrust caused it to travel like a young cannon ball and, though it did not go over the plate every time, it went near it several times, judging from the way the batters jumped back as it rushed at them. Ed Paul, with his experience as a bowler, relied more on his ability to "draw" the ball, and we all know that, whether it is a bowl or a tooth, Ed is right there when the "drawing" has to be done.

In the first innings Gus Kennedy's Kickers led, but after that Eddie Paul's squad came to life and batted the ball like veteran players, the official score as reckoned by Miss Arnold being 12—11 in their favor. Although modern baseball language is fairly vivid, a few new terms would have to be coined to do justice to some of the plays, notably Gilroy's three-bagger and Woollatt's catch of a high fly after an "Al Shaw" sprint across right field.

The programme of races was next run off as smoothly as at a real athletic meet. There was a big entry list for every event. The first one open to the ladies was the egg race. About twenty-five ladies competed. It seems to be a pretty hard thing for a lady attired in the modern style of frock to run 50 yards with an egg balanced on a stinging little teaspoon, but the ladies were game, all finishing the race, though some arrived minus the egg. Miss Arnold and Mrs. Charlie Bell were first and second respectively in crossing the line, having a good margin of lead on the other ladies.

Starters in the fat men's race were fewer than usual, some of the eligible heavyweights having not entirely recuperated their energies after the ball game. This race showed that there are exceptions even to natural physical laws (?)—particularly that one which states that large bodies move slowly. Henderson, Slade and Bell sprinted from the starting line more like young gazelles than men of

the 200-lb. class. The course was slightly down hill, which seemed to favor the heaviest man, friend Slade, whose speed accelerated as he neared the finishing line. Webster and Grieve, the judges, seeing the runners bear down upon them and alarmed at the momentum they had acquired, leaped to one side as the heavyweights crashed across the rope, Slade in the lead, with Henderson and Bell pressing him hard for place.

The needle-threading race was a sort of tandem affair. The gentleman had to run 50 yards, thread a needle held by his lady partner in the game, and then run back with her to the starting point.

The smoking race was an endurance contest. Pipes, tobacco, and matches were provided. The contestants had to run half the distance set, secure a pipe, fill and light it, and finish the race with the pipe lit. As the matches supplied were the "eight day" kind, the man who could stand the most punishment in the way of swallowing sulphur fumes had the best chance. Gilroy was the hero in this race, with Bell second man.

The nail-driving contest for the ladies brought out so many competitors that three heats were required. Miss McAllister and Mrs. Frawley winning out in the final, driving the nails with a speed and precision that would make an ordinary compressed air rivetting machine blush with envy.

The fresh air and the exercise of participating in the games had given all good appetites, so the announcement that the dinner was ready was very welcome.

The ladies' prizes were boxes of bon-bons, which they generously shared up with the rest of the party. It would be just as well perhaps not to mention what the gentlemen's prizes were, as it would only deepen the regret of the dentists who were unable to attend, and perhaps result in a protest against the extravagance of the committee.

After the distribution of prizes Mr. Heron, who last season was leading man with the "Buntz Pulls the Strings" company appearing in Toronto, gave a treat to all by his rendering of several selections from "Buntz" in his rich musical Scotch tongue. It was a rare treat indeed and put a delightful finishing touch to this part of the programme. A vote of thanks to Mr. Heron for his hospitable treatment was put to the vote of those present by Chairman George Grieve and unanimously adopted.

In every respect it was a very pleasant outing. The committee in charge of the arrangements are deserving of the congratulations and thanks of those who were present for the successful planning of a very enjoyable afternoon.

J. E. RHIND.

## ***The Distribution of Nerves in the Dental Pulp and in the Dentine.\****

LECTURE BY J. HOWARD MUMMERY, M.R.C.S., L.D.S., AT  
GUY'S HOSPITAL DENTAL SCHOOL.

**I** DO not think you need much persuasion to make you believe that the dentine is sensitive, and I do not think your patients will require any further conviction than your ministrations will afford. Still, John Hunter considered the dentine was not sensitive. Whether he argued on his own experience I do not know, because it was unlike John Hunter to draw conclusions from a single experience. Still, no one in his day appeared to have agreed with him that dentine was not sensitive. But we know that dentine is very sensitive tissue indeed. Yet the problem of the mode in which sensation is conveyed from it to the brain has long been an unsolved one. This is chiefly due to the difficulties connected with tracing organic elements in the hard substance of the tooth. The dentine having so long eluded observation, it was not much to be wondered at that the much more minute structure of the ultimate nerve fibrils escaped observation for so long a time, and it is only in consequence of the improved methods of histological research during the last few years that this investigation has been rendered possible. I will not dwell on the different views of innervation of the dentine, because I know Mr. Hopson has already dealt with that in his lectures. But I may say that for many years past it has been treated by most authorities as a doubtful question, some considering that the conduction of sensation through the dentinal fibril to the odontoblast cell would account for all the phenomena; others, such as Professor Kolliker, Professor Klein, and Mr. Jas. Salter—all great authorities in dental histology—consider that the ultimate distribution of the nerves of the pulp has not been traced. And the two latter were of opinion that it would ultimately be found that true nerve fibres ran in the dentinal tubes, and that the dentine would be brought into line in that way with the other tissues with regard to this mode of transmitting sensation. It seemed very unlikely that dentine should be an exception to all

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\*From an address delivered at Guy's Hospital School, December, 1912.



other tissues of the body and should not conduct sensation by means of nerve fibrils. The view held by Hopewell-Smith was that the odontoblast cells acted as a sort of ganglion cell, through which sensation was transmitted. But there are many objections to this, one of them being that dentine is formed from the mesoblastic tissue and the nerves from the epiblastic tissue; so mesoblastic odontoblast cells conduct from epiblastic tissue to nerve cells, which is always considered to be an impossibility.

With respect to my own investigations, I have long thought that true nerve fibres ended in dentinal tubes, and more than twenty years ago I had seen what I considered distinct evidence that such was the case. It is only in the last few years that I have been able to procure specimens which I considered adequately proved that the nerves did pass into the dentine. You are aware that the nerve fibres enter the pulp with the blood vessels at the apical foramen, that they enter in a considerable number of bundles of medullated fibres; in fact, the nerve supply of the pulp is so abundant that it is difficult to understand how it could be destined for the pulp alone. And another very striking point is that in longitudinal sections many of these nerve bundles traverse the pulp up to the crown at the cornu of the pulp without giving off any branches to speak of. There are some, but only a few.

But you see a large bundle of medullated fibres traverses the tooth to the cornu. I hope to show that these terminals sent off at this point and elsewhere in the pulp are not individual nerve fibres, but bundles of them; and the probability is that they are given off in the dentine. It is well known that the medullated fibres lose their sheath, or neurilemma, and their medullated sheath—which is probably their protective investment—during their passage through the tissues. And as they reach their destination these sheaths are lost, and they are distributed as neuro-fibrils or the elements of the axis cylinder of the nerve. This neuro-fibril is the essential part of the nerve fibre. It leaves the cell in the brain as a naked neuro-fibre; as it passes through the tissues it acquires a neurilemma, and further on still it sheds the neurilemma and again becomes a naked fibril. You will see it distributed to the dentine as a beaded fibril. I shall show you presently, by means of slides, what is evident under the microscope, and you can see sections on the table. The axis cylinder is shown made up of neuro-fibrils dotted or beaded. This is especially

brought into view by chloride of gold stain, by the method I have been using lately, a modification of Löwit's. You will see the bundles of axis cylinders running alongside the blood-vessels, and the blood-vessels have taken on the contrast stain, namely, eosin. The medullated fibres subdivide in the pulp, and break up into very fine fibres distributed in the substance of the pulp. But most of these fine fibres are given off in the nerve fibres on the periphery of the pulp, and pass into a dense plexus immediately beneath the odontoblasts. This is called the plexus of Raschkow, after the histologist who described it. This plexus appears to be formed by an interlacement of fibres, rather than anastomosis; they seem intimately connected without being fused into one another. From this plexus fine fibres stretch out again in more or less parallel lines between and around the odontoblasts; they seem to involve the odontoblasts in a meshwork in many cases. Then they pass into a narrow plexus at the margin of the dentine. This plexus has been described as the terminal plexus of the nerves of the pulp. It was considered that this was the way in which the nerves of the pulp ended. But I have been able to show that from this marginal plexus, as I have called it—we cannot now call it the terminal plexus—they again proceed and pass into the dentinal vessels. You will see that by the slides on the table; and they traverse the dentine in company with the dentinal fibril. They are very closely attached to the dentinal fibril, for often when the latter is pulled from the dentine you will see the little nerve fibres running alongside. This mode of distribution appears to occur at all parts of the periphery of the pulp, at the tip of the cornu. In two or three specimens which I have lately cut, the bundles of nerve fibres run up to the point I describe. They are serving some purpose in the pulp, and I have seen them sending off their fibrils and passing into the dentine in very much larger bundles than round here, where they go in very fine bundles. They are thicker bundles, but not thicker fibres. You will see the red-stained part is the bundle of medullated fibres. You cannot see the sheath, because it is not stained, except by a special osmic acid stain. There is a complete absence of the plexus of Raschkow here, but you will find it at other parts of the tooth. When I obtain the fresh material, which I am at present in want of, I shall endeavor to cut as many sections as possible in this plane to ascertain if this mode of termination at the cornu is constant. It is difficult to obtain a sufficient number of young

teeth, although I have had the assistance of many friends. I must have young bicuspid, and if any of you should come across such, and will put them in 10 per cent. formalin for me, I shall be glad. They should, of course, be put in as soon after extraction as possible. In many preparations I find beaded fibres pass in close connection with the dentinal fibres, and more than one nerve for each tube. But it is difficult to tell how many go into a tube, because you never cut sections in which you have only one. And that makes dentine such a difficult subject to investigate, because of the crossings and the undulations of the tubes. They can be traced as fine dotted lines into the dentine, and preparations have been successfully impregnated with nitrate of silver and with protargol, which is an organic salt of silver, showing the whole of the dentine permeated everywhere with delicate branches. It has been considered that these fine branches and tubes are very little visible in the crown of the tooth. There are very few under the enamel, and there are not otherwise very many of these fine branches. They are very plentiful in the root. These specimens show plainly that the whole of the dentine is permeated with these branches, and the reason we have not seen them is that we have not used the right stain to bring them out. The ordinary aniline stain will not do it. Nitrate of silver or protargol will show that the dentine is permeated with long, delicate branches, which show under the microscope and in the drawings. This is not an ordinary impregnation with nitrate of silver; they have to be impregnated with nitrate of silver and reduced with pyrogallie acid and formalin, and that brings down the nitrate of silver in black, and stains the dentine a deep brown. In the fine branches you can detect these dotted lines close up by the enamel, and close to the cementum even little dotted lines are clearly seen.

These lines are very fine indeed, and apparently represent the finer divisions of the neuro-fibrils which enter the pulp. It evidently shows that these dotted lines get finer and finer as they near the periphery of the tooth. The neuro-fibrils are capable of dividing. It is a point about which there had been some doubt, but there is now no doubt that the neuro-fibrils do divide in the tissues. The slides under the microscopes show these divisions and lines with very great distinctness. The same is seen at the junction of enamel and dentine, where the dentinal tubes are coarser than at the cement margin; many of the tubes look truncated, as if they had been cut off. That is explained by the dentine undergoing, during development, an interchange of



absorption and deposition. It is little understood why that should occur, but it looks as if it is so. These truncated ends of the tubes you do not see under the cementum. But, at all events, you can trace in the fine tubes under the enamel the same thing. I therefore consider that the true terminations of the nerves are by fine arborizations of these neuro-fibrils beneath the enamel and cementum. In regard to where the dentinal tubes penetrate the enamel, and in the so-called spindles which you often see in teeth, the curious projections into the enamel, I cannot say whether the nerve fibres penetrate into these, because it is exceedingly difficult to get a thin section of enamel and dentine in contact by the Weil process, which is the only one to show it. If I can get a tooth and happen to cut it in the right plane to get these spindles, we can see whether these dotted fibres pass in. Professor Reaumer says they do, and that this is the final termination of the nerve fibres in the pulp. He said he saw nerve end bodies stained red by chloride of gold. I now show you the section of a prehistoric tooth, taken from one of the British battlefields. I am sure, from the appearance of the spindles in this case, you would say there was a nerve end body in the spindle. That was a tooth which had been dried for centuries. That looks so much like it that it is easy to understand how one might be mistaken in looking at these highly refractive bodies. It is possible that nerve endings are there, but I do not think it has been proved. The specimen which I spoke of makes one very careful about giving an opinion.

It seems astonishing that such an enormous number of nerves should be distributed to the dentine. It is difficult to understand, and it has been suggested that these nerves are not all nerves of sensation, but that many of them may be trophic nerves. Of course, all cells which are engaged in active secretion have nerves, and it is possible that this has some connection with calcification of the tooth. There is no doubt that in the pulp you sometimes see non-medullated nerves. I have seen many, especially by the Weil method. You can often see non-medullated fibres accompanying the medullated fibres.

Some beautiful lantern slides and drawings, and some of the most perfect sections ever cut were shown in support of these views; and Mr. Mummery very kindly spent over an hour, after the conclusion of his lecture, in demonstration and explanation of his work.—*The Australian Journal of Dentistry.*



## *The Nursing Aspect of Medical Inspection of Schools.\**

BY LINA L. ROGERS, R.N.,  
Superintendent of School Nurses, Toronto.

THE nursing aspect of medical inspection has changed very materially since the work began. In former days the nurse's duty was limited to treating in the school the children sent by the Medical Inspector and making home visits. The object of the visits was to explain the reason for exclusion and, if advisable, to suggest home treatment. Later the nurses made weekly class-room inspections in addition to their other duties. At the present time the work of the school nurse presents quite a different aspect. She is a municipal social service worker as well as a school nurse. Owing to the varying populations and changing conditions in different cities, the work must necessarily be planned along lines to suit the community in which the work is to be done. I wish to speak particularly of the system in Toronto—as it now is.

The nurse's first duty in the morning is to readmit pupils who have been absent two or more days for any unassigned cause. If she is in doubt about the condition the child is left to await the arrival of the Medical Inspector. The nurse makes minute inquiries as to the reason for absence, whether there has been illness in the home, or if the child itself has been ill, and finally makes a general inspection of the child before signing the readmission slip, which is sent to the teacher.

The nurse's next duty is to inspect a certain number of class-rooms. During the inspection any children found with defects, disease or marked uncleanness are sent to the nurse's office for a closer and more careful inspection.

The child with very dirty hands and face is given soap and a paper towel and is shown how to wash, as often there are no facilities at home for performing even this simple task. Cases for diagnosis are referred to the Medical Inspector by means of a reference card. The child with the

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\*Read before the Physical Training and School Hygiene Section, Ontario Educational Association.

unclean head is given a printed form stating how the hair should be treated. This is carefully sealed in an envelope and directed to the mother. The child is sent home and told to return just as soon as the head can be cleaned. Those with unclean and decayed teeth are asked to bring money for a tooth brush and paste, if they have none. These are supplied to school children at cost by the Board of Education. The nurse is responsible for the supply ordered. Demonstrations are given to the children on the care of the brush and paste and regular tooth brush drills kept up. Those requiring dental care are taken to the dental clinic and appointments made. The nurse keeps a watchful supervision over them and sees that the appointments are kept, as far as possible, until the teeth are finished, and the card comes back marked "terminated." If a child is found with defective eyesight he is taken to the eye clinic, where an oculist examines the eyes and gives a prescription. This is taken to an optician, who fits glasses at cost. The Board of Education provides glasses when parents are unable to pay for them. When a condition of enlarged tonsils and adenoids is present and hearing or breathing is interfered with, the nurse does not rest until she has these conditions remedied. She obtains the written consent of the parents and takes the children to the clinic and make an appointment for operation. She keeps track of the child until he is through with the hospital treatment and back in school again. If a child has some orthopedic defect he is taken to the hospital and the defect corrected. If it is a case where the splints or braces have become too small, means are looked for to have proper braces supplied. The nurses have been asked to help in securing artificial eyes and limbs for wage-earners of a family, and they have never failed to find some way of providing what was wanted through charity organization or private charity.

When a case of suspected contagious disease is found a suspect slip is given to the child, stating the reason for being sent home. A duplicate is sent to the central office. The Medical Inspector is notified and visits the child within twenty-four hours to make the diagnosis. The Board of Health is notified as soon as a positive diagnosis is made. A large number of contagious cases have been detected and isolated through this precaution. Recently in one of the schools of this city a teacher told the school nurse that her throat had been troubling her for several days. The

nurse examined the class and sent several children to the Medical Inspector with the request to have them examined. She also notified the Superintendent of Nurses. Culture tubes were sent to the school at once by the Chief Medical Inspector with an order that the throats of all children in that class be swabbed. The next day it was learned that out of the forty (40) cultures taken 7 were positive; and one of the carriers was the teacher.

In one overcrowded school a class was held in a near-by church, in a room used for Sunday School. Cases of diphtheria were reported from time to time, and finally, when two were reported at the same time, cultures were taken of the whole class. It was found that there were six carriers. The nurse also discovered that the carpet used in the hall floor and leading into the class-room had not been lifted for ten years. This seems to be a place where cleanliness was *not* next to Godliness. The value of the work of the school nurse in the homes cannot be estimated. She is a friendly adviser to the mother and helps to regulate all the family affairs, from getting work for the father to helping the mother provide clothes for the new babe. When a case of discharging ear is found a culture is taken, and in a number of cases the bacilli of diphtheria have been found. These children are excluded until all danger is past, and in several instances operations have been necessary to save the child. When a child is noticed looking anemic and appears listless and lacks energy, and especially if a cough is present, the nurse goes to the home on a friendly visit and by dint of sympathetic questioning unearths a history of consumption in the family. This child is sent to the Medical Inspector for examination. If he decides a further examination is necessary the child is taken to the chest clinic and a report sent to the office. The child is kept under careful supervision and the name recorded for reference.

I have many reports in the office of children 2, 3 and 4 years of age who have had glasses fitted through the nurse's efforts. A nurse saw a child turning its head to one side to look at a picture book, when it should have been looking directly at it, and observed what the mother never would have suspected, that there was some defect of eyesight. The nurse took the child then and there to the eye clinic. Is not that repaying a hundred-fold?

Another report states that a child with an offensive discharging ear, and who could not hear when the mother called

to him, was taken by the nurse for examination. A foreign body was removed from the ear that had been there for two years. Think of the difference in the future of that child.

Our campaign for clean teeth has had remarkable results. A large number of the school children are going to their own dentists, others to clinics. The municipal dental clinic which has recently been started and the school clinics, which are being established by the Board of Education, will mark an era in progressive measures for the care of the teeth hitherto unknown.

The school nurses have provided the equipment for one of these clinics, and it is hoped that it will be a model for every city, town and village in the Dominion.

We are aiming to make a better and happier nation of our children. If we can in the least measure help in protecting those of tender years until they can reason out the value of life and its surroundings we shall not have worked in vain.

A few concrete cases will serve to show what Toronto's particular needs are and how we dispose of them.

The following was reported to the school nurse by the truant officer. A mother was just recovering from an illness and able to work very little. She, with the father and four children, were living in one room on the third storey above a Chinese laundry. The air was stifling. The furniture consisted of a Daisy cot, a mattress on the floor and a very small heating stove. The school nurse called three times, providing some clothes. She paid 75c. to have a bed taken to the family which a friend had given her. The school donated \$5 from their fund to buy food. The nurse left three tooth brushes for the children. Finally she looked up relatives of the family who did not know of their distress and they found better quarters for them and suitable furniture. The family is now in comfort.

Georgie, aged eight, and sister Gertrude, aged eleven, were found at home with six other children. Mother dead. The oldest daughter, who is the housekeeper, had her leg and arm amputated by a street car shortly after coming out to this country from Russia. Georgie, who was very anæmic, was taken by the nurse to the Sick Children's Hospital because he was unable to see to do his work in school. It was found that he needed glasses and they were fitted. He was then taken to the Forest School for the summer.



His physical condition being so much better for the rest, food and fresh air, he was taken to the hospital on his return and had his tonsils removed. Glasses were fitted a second time, because he broke the first ones, the father having to pay for them this time. He was then taken to the municipal dental clinic and his teeth were filled. By this time it was decided that Gertrude should have something done for her throat, and the father gave his consent to have her tonsils removed. This was done, and she also had her teeth filled at the municipal dental clinic. They will both go to the Forest School again this summer. It is hoped that in the fall they will start again with a new lease of life. Just consider the facts of this case.

Another nurse found a little girl, 10 years of age, in a class-room, suffering from defective vision. The teacher reported that she could not see to do her work. On visiting the home the nurse found that the mother had died and left a number of children. The father seemed to care very little about them and they were placed in various homes. The woman who adopted this little girl was very poor and did not feel that she could afford to spend money for glasses. The school nurse took her to the Hospital for Sick Children eye clinic, procuring a prescription for the glasses which the doctor said she should have at once. The little girl said she would try to persuade her father to give her money for the glasses when he next came to see her. He gave her \$2, and the woman who so kindly looked after her had a pair of frames, which she gave. The complete cost of the glasses was \$1.50. She is now getting along much better at school and the nurse is going to take her to the dental clinic and have her teeth put in order. The father refuses to have anything done to the teeth.

Still another report comes to the school nurse, on going to look up a school child, found Alice, 12 years old, keeping house and looking after two little boys. The boys were put in the Orphans' Home and a friend of the nurse offered to take Alice for a couple of years and allow her to finish her schooling.

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## ***Dominion Dental Council.***

EXAMINATION RESULTS, JULY, 1913.

THE following passed in the subjects indicated: —

### *Operative Dentistry (Clinical).*

Allan, J. C.; Brown, Douglas; Dixon, J. M.; Doyle, J. R.; Dean, J. A.; Fuller; Harris, G. W.; Haynes, W. T.; Johnson, K. M.; Leatherdale; Locks, D. C.; Lumsden, J. H.; McKay, D. A. P.; McPherson, A. D.; McEwen, W. J.; McLean, D. R.; McLaughlin, W. H.; Minns, C. R.; McKay; McCarten, D. A.; Parkin, M. R.; Purdon, C.; Reynolds, J. W.; Robertson, G. J.; Schwitzer, H. M.; Staples; Sawaya, F. S.; Tindale, M. C.; Trelford, W. G.; Vandervoort, C. E.

### *Prosthetic Dentistry (Clinical).*

Allan, J. C.; Brown, Douglas; Connolly, G. V.; Dixon, J. M.; Doyle, J. R.; Dean, J. A.; Fuller; Godwin; Harris, G. W.; Haynes, W. T.; Johnstone, K. M.; Leatherdale; Locks, D. C.; Lumsden, J. H.; McKay, D. A. P.; McPherson, A. D.; McEwan, W. J.; McLean, D. R.; McLaughlin, W. H.; Minns, C. R.; McKay; McCarten, D. A.; Parkin, M. R.; Purdon, C.; Reynolds, J. W.; Robertson, G. J.; Schwitzer, H. M.; Staples; Sawaya, F. S.; Tindale, M. C.; Trelford, W. G.; Vandervoort, C. E.

### *Operative Dentistry (Paper).*

Allan, J. C.; Adams, J. L.; Brown, Douglas; Connolly, G. V.; Dixon, J. M.; Doyle, J. R.; Dean, J. A.; Harris, G. W.; Haynes, W. T.; Hamilton, R. S.; Hughes, W. E.; Johnstone, K. M.; Locke, D. C.; Lumsden, J. H.; McKay, D. A. P.; McPherson, A. D.; McEwen, W. G.; McLaughlin, Chas. E.; McLean, D. R.; McLaughlin, W. H.; Minns, C. R.; McCarten, D. A.; Parkin, M. R.; Purdon, C.; Reynolds, J. W.; Robertson, G. J.; Schwitzer, H. M.; Sawaya, F. S.; Tindale, M. C.; Vandervoort, C. E.

### *Prosthetic Dentistry (Paper).*

Allan, J. C.; Adams, J. L.; Brown, Douglas; Connolly, G. V.; Dixon, J. M.; Doyle, J. R.; Dean, J. A.; Harris, J. W.; Haynes, W. T.; Hamilton, R. S.; Hughes, W. E.; Johnstone, K. M.; Locke, D. C.; Lumsden, J. H.; McKay, D. A. P.; McPherson, A. D.; McEwen, W. J.; McLaughlin, C. E.; McLean, D. R.; McLaughlin, W. H.; Minns, C. R.; McCar-

ten, D. A.; Parkin, M. R.; Purdon, C.; Reynolds, J. W.; Robertson, G. J.; Schwitzer, H. M.; Sawaya, F. S.; Tindale, M. C.; Vandervoort, C. E.

*Physics, Chemistry, and Metallurgy.*

Adams, J. L.; Bailey, N. S.; Bricker, J. S.; Box, H. K.; Cowan, C. H.; Chisholm, G. P.; Duff, J. H.; Dean, J. A.; Gardiner, B. R.; Harris, G. H.; Hill, A. N.; Hughes, W. E.; Locke, D. C.; McLellan, F. F.; Parker, C. W.; Sawaya, F. S.; Stewart, H. A.; Sutherland, D. J.; Schwalm, H. V.; Sebben, J. F.; Vandervoort, C. E.; Woodbury, K. F.

*Jurisprudence and Ethics.*

Allan, J. C.; Adams, J. L.; Brown, D. L.; Connolly, G. V.; Dixon, J. M.; Doyle, J. R.; Dean, J. A.; Gardiner, B. R.; Harris, G. W.; Haynes, W. T.; Hughes, W. E.; Johnstone, K. M.; Locke, D. C.; Lumsden, J. H.; McKay, D. A. P.; McPherson, A. D.; McEwen, W. J.; McLaughlin, Chas. E.; McLean, D. R.; McLaughlin, W. H.; Minns, C. R.; McCarten, D. A.; Mustard, H. A.; Perkin, M. R.; Purdon, C.; Reynolds, J. W.; Robertson, G. J.; Schwitzer, H. M.; Sawaya, F. S.; Tindale, M. C.; Trelford, W. G.; Vandervoort, C. E.

*Medicine and Surgery.*

Allan, J. C.; Adams, J. L.; Brown, D. L.; Connolly, G. V.; Dixon, J. M.; Doyle, J. R.; Dean, J. A.; Harris, G. W.; Haynes, W. T.; Johnstone, K. M.; Locke, D. C.; Lumsden, J. H.; McKay, D. A. P.; McPherson, A. D.; McEwen, W. J.; McLean, D. R.; McLaughlin, W. H.; Minns, C. R.; McCarten, D. A.; Parkin, M. R.; Purdon, C.; Reynolds, J. W.; Robertson, G. J.; Schwitzer, H. M.; Sawaya, F. S.; Tindale, M. C.; Trelford, W. G.; Vandervoort, C. E.

*Anaesthetics and Materia Medica.*

Bricker, J. S.; Box, H. K.; Dean, J. A.; Gardiner, B. R.; Harris, G. W.; Hill, A. N.; Hughes, W. E.; Locke, D. C.; McKay, D. A. P.; McLaughlin, Chas. E.; Sawaya, F. S.; Stewart, H. A.; Sutherland, D. J.; Schwalm, H. V.; Sebben, J. F.

*Pathology and Therapeutics.*

Adams, J. L.; Bailey, N. S.; Cowan, C. H.; Chisholm, G. P.; Dean, J. A.; Gardiner, B. R.; Harris, G. W.; Hamilton, R. S.; Hill, A. N.; Hughes, W. E.; Locke, D. C.; McLaughlin, Chas. E.; Parker, C. W.; Sawaya, F. S.; Stewart, H. A.; Sutherland, D. J.; Schwalm, H. V.

*Orthodontia.*

Allan, J. C.; Adams, J. L.; Brown, Douglas; Connolly, G. V.; Dixon, J. M.; Doyle, J. R.; Dean, J. A.; Harris, G. W.; Haynes, W. T.; Hughes, W. E.; Locke, D. C.; Lumsden, J. H.; McKay, D. A. P.; McPherson, A. D.; McEwen, W. J.; McLean, D. R.; McKeown, G. H.; McLaughlin, W. H.; Minns, C. R.; McCarten, D. A.; Parkin, M. R.; Purdon, C.; Reynolds, J. W.; Robertson, G. J.; Schwitzer, H. M.; Sawaya, F. S.; Trelford, W. G.; Vandervoort, C. E.

*Anatomy.*

Chisholm, G. P.; Cooper, W. G.; Dean, J. A.; Kenny, A. A. B.; Lawson, F. J.; Leggo, A. R.; Locke, D. C.; McCarten, T. C.; McLellan, F. F.; McGrary, F. S.; Parker, C. W.; Roberts, J. G.; Sawaya, F. S.; Smockum, S.; Tucker, F. S.; Thompson, H. A.; Wright, T. J.

*Physiology, Histology, and Bacteriology.*

Bailey, N. S.; Bricker, J. S.; Box, H. K.; Chisholm, G. P.; Duff, J. H.; Dean, J. A.; Gardiner, G. R.; Harris, G. W.; Hill, A. N.; Hughes, W. E.; Locke, D. C.; McLaughlin, C. E.; McLellan, F. F.; Pennal, R. J.; Parker, C. W.; Sawaya, F. S.; Stewart, H. A.; Sutherland, D. J.; Schwalm, H. V.; Sebben, J. F.; Woodbury, K. F.

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***Bad Teeth Affect the Mind.***

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THE first case was a young man, 21 years of age, who had developed from a bright, honest little boy into a thief, burglar and convict. The boy spent two years in the House of Correction. He went very willingly, because he felt his lack of self-control and thought he might be cured, but he came back not cured and with a contempt for all law and order.

Professor Upson had a skiagraph made of the boy's mouth, and he found a wisdom tooth badly impacted, several of the molars abscessed at the roots, and also one of the incisors. He extracted all these teeth.

A month later the boy went home and obtained a position, his mental condition gradually improving. Several months later another abscessed tooth was extracted. Immediately following the extraction there was a great increase of all the nervous symptoms, but these never amounted to insanity, as in former attacks. Two weeks later, however, there was a wonderful change for the better, and the boy has steadily improved ever since. There has been no return of the immoral or mental symptoms.—Clara H. Town, *Dental Review*.



## ***A Study of Saliva and Its Action on Tooth Enamel in Reference to Its Hardening and Softening.***

BY JOSEPH HEAD, M.D., D.D.S., PHILADELPHIA, PA.

ENAMEL softening has been considered to be necessarily associated with roughening of the surface, loss of lustre, and dissolution of the cemental substance that binds the enamel rods together; and whenever enamel decalcification is associated with decay of dentin this conception of enamel softening is only too accurate. But this conception seems to be only a part of the story, so to speak—the final part rather than the complete process of enamel degeneration.

For instance, 1 to 1,000 lactic acid and water at mouth temperature will cut tooth enamel in thirty minutes with a rough, white surface. A tooth placed in 1 to 500 lactic acid and some saliva will be unharmed. A tooth placed in this solution made with other salivas, after three or four days, may show the enamel perfectly smooth and to all appearances normal, and yet it can readily be pared to a slight distance with a lancet. A 1 to 500 saliva and lactic acid solution has an extremely acid taste and instantly turns litmus brilliantly red. A 1 to 20,000 lactic acid and water solution will, at the end of three or four days, leave the tooth enamel unharmed to all appearances, and yet the outer surface of the enamel will, with the edge of the lancet, be found to have distinctly softened. A 1 to 500 lactic acid solution with my saliva, although the solution has a decidedly acid taste, will produce this identical effect. The appearance of the enamel is unchanged, but distinctly softened to the cut of a lancet, although before the tooth has been immersed the lancet is unable to make any impression on it.

The action of water solutions of acid calcium phosphate and acid sodium phosphate on the teeth has been mentioned by Kirk, stress being laid on the fact that these salts cause smooth white decalcification. As a matter of fact, many acids in water solutions cause smooth primary softening, if the solution is sufficiently weak. Saliva ordinarily restrains the action of most acids up to a certain point, and then begins with the smooth decalcification and ends with the

same rough white decalcifications that we find in a water solution. The saliva solution is ordinarily from ten to twenty times weaker in its action on enamel than is a water solution of the same acid strength. The acid sodium phosphate and acid calcium phosphate are, however, intensely interesting in their action, not only in water solutions but in saliva solutions. Acid calcium phosphate 1 to 5,000 water solution, and acid sodium phosphate 1 to 20,000 water solution at the end of two days, will turn tooth enamel into a cloudy, pearly white, with a clear, smooth surface. This surface is distinctly softened to the cut of a lancet. If, however, these teeth are removed from the solutions before the process advances too far, the cloudy appearance will in time disappear, and the tooth enamel will resume its normal appearance. This phenomenon occurred many times, but once when I retested the hardness of these teeth with a lancet I found that not only had the white color disappeared but the superficial softening of the enamel had disappeared also. At first I attributed this disappearance of the softening of the enamel to previous faulty observations, but the same phenomenon occurred in my lactic acid test. A tooth that had been placed in a 1 to 20,000 lactic acid watery solution, at the end of a few days, was slightly softened to the cut of the lancet, but a month or so later the lancet would not cut it. It was then that the possibility was made apparent that partially softened smooth enamel could reharden itself if the decalcification had not progressed too far.

I then made the following test: Two sound teeth with enamel impervious to the lancet were each placed in a lobe of a navel orange. These lobes were each placed in a bottle with a few drops of ether to prevent fermentation, and kept at body temperature for two days. At the end of that time the teeth were removed and examined. The lobe around one of the teeth had fermented, the lobe around the other had not. The tooth in the fermented lobe showed a smooth, white, translucent area of decalcification, running from the cutting edge to about one-third of the distance to the neck. The rest of the enamel was normal to all appearances, and yet the surface, both of the white and the apparently normal enamel, was readily pared with a lancet. The lobe in which the other tooth was embedded had not fermented, and the enamel also seemed normal, but here again the outer surface of the tooth enamel was distinctly softened. These teeth were then washed in water and kept in some of my saliva at body temperature for two weeks. At the end of five days there was a decided rehardening of the enamel surface, and

the white area of decalcification on the tooth mentioned had half disappeared. At the end of ten days the enamel could no longer be scratched with a lancet; at the end of two weeks the white spot of decalcification had almost if not entirely disappeared, and both teeth appeared perfectly normal.

That saliva does possess the power of restraining enamel from carbon dioxid decalcification was proved as follows: A sound extracted tooth was placed in a sparklet or automatic soda water former, where the liquid within could be charged from a carbon dioxid cartridge. Thirty cubic centimeters of saliva were added which had been obtained by chewing rubber. The saliva was then charged with carbon dioxid and the sparklet placed in a culture oven at a temperature of 98 F. for thirty days. At the end of that time it was taken out and appeared unharmed. The tooth was then washed with a little ether and replaced in the syphon with distilled water. This water was then charged with carbon dioxid and the flask replaced in the culture oven for twenty-four hours. At the end of that time the enamel showed a chalky decalcification that could be scaled off with the finger nail.

This protective power of saliva is also exerted against lemon, orange, grape, grape fruit, strawberry, rhubarb and cherry, the special action of which was the subject of a paper I wrote in 1908.

These experiments with extracted teeth, weak acid solutions and tests with a sharp lancet in the hand, while suggestive, seemed to me not sufficient to establish so reactionary a doctrine; so while morally convinced of the truth of my assertion that softened enamel could reharden, I immediately started to perfect a machine that would show in the minutest degree just how far a given force would drive a standard punch into sound enamel, partly decalcified enamel and rehardened enamel, if it did reharden, from the effects of slight decalcification. I will not dwell on the discouraging task of making good mechanics work with a scientific conscience. They would not do as they were told, and much of the adjustment had to be done by the deviser of the instrument, which from at first having an error of 1/500 of an inch, finally developed into a micro-dynamometer that could deliver 475 pounds' pressure on a punch, the penetration of which could be measured up to 1/600,000 of an inch. Something approaching this accuracy was necessary, as it was found experimentally that the scope of the average test lay usually within 1/10,000 of an inch. It was, however, decided to set the register so that it would measure in units of 1/300,-

000 of an inch, which, as can readily be seen, could be reduced by a table to microns or tenths of microns, one micron being equal to  $1/25,000$  of an inch, twelve of the machine units, therefore, being equal to one micron. The pressure was given by a mercury gauge to which the punch was attached. A micrometer screw supporting the anvil on which the specimen for testing was to be placed was strongly connected by castings and heavy drawn steel rods beneath the mercury gauge and punch. The pressure was applied to the specimen by placing it on the anvil and raising the anvil by the screw up against the punch until the mercury marked the pressure desired. The penetration of the punch into the specimen was made known by a microscope equipped with a specially constructed filar micrometer, which microscope was solidly screwed to the anvil. This microscope was then adjusted and set so that it could accurately divide into the desired number of parts a glass scale attached to the punch. By this device, all error in the use of the machine was largely thrown out, since only the relation between the punch and the anvil was within the scope of measurement.

In making the various tests three punches are used: a heavy steel punch with a flat hardened circular point  $1/50$  of an inch in diameter; an iridium pointed punch  $1/50$  of an inch in diameter for testing acid erosion; it will stand up to 25 pounds without showing compression; a diamond-pointed punch with a circular, flat point  $1/50$  of an inch in diameter that can be used in acid solutions and will also readily stand 100 pounds' pressure. Twenty-five pounds' pressure with the diamond point will give a penetration equal to 75 pounds with the steel point. This is no doubt due to the greater sharpness of the diamond edge over the steel.

*(To be continued in the next issue.)*

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## MULTUM IN PARVO.



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Librarian, Royal College of Dental Surgeons of Ontario

*Helpful Practical Suggestions for publication, sent in by members  
of the Profession, will be greatly appreciated by this Department.*

PREVENTING NAUSEA IN TAKING AN IMPRESSION.—If a patient has a tendency to nausea, a little of the following solution should be painted on the soft palate: Cocaine hydrochloride, 0.25; menthol, 0.10; phenol, 1.00; distilled water, 50.00; alcohol enough to make a 90 per cent. solution.—*Dental Cosmos*.

DESENSITIZING SENSITIVE DENTINE.—Hypersensitive dentine at the cervical margin is best treated with a concentrated solution of sodium bicarbonate in glycerin, thus avoiding discoloration as produced by silver nitrate.—*Dental Cosmos*.

BUCKLING OF GOLD PLATES.—To prevent the buckling of gold plates in swaging, cut a slit at the median line, from margin to ridge, lap, when swaged, solder. This should be done in all cases, as this is the weakest point and breaks there. By doing this the weak point is doubled in strength.—L. P. Haskell, *Dental Review*.

CONTRA INDICATIONS TO ANTIPYRINE.—Antipyrine is contra-indicated in persons with cardiac trouble, owing to the depressing effect of this drug upon the heart, with subsequent circulatory disturbances.—*La Odontologia Colombiana*.

TEST FOR SULPHO-CYANATE IN SALIVA.—The test for sulpho-cyanate is extremely simple. Take two centigrams of saliva to which two centigrams of distilled water slightly acidulated with dilute acetic acid has been added; mix, and add five drops of saturated solution of ferric chloride. If the saliva contains no sulpho-cyanate the color will be pale lemon. If there is any sulpho-cyanate the color will vary from a light to a dark reddish brown, according to the quantity present.—F. H. Skinner, *Dental Review*.

TO OVERCOME GAGGING.—A patient gagging from the use of the rubber dam, I took some potassium bromide and made a solution in water by guess, and with cotton on the foil carriers rubbed this solution over the tongue and palate. I then filled the tooth without any trouble. Before taking an impression this will have the same effect.—G. H. Henderson, *Dental Review*.

TO REMOVE BLOOD STAINS.—To remove blood stains from white clothes pour some  $H_2O_2$  on the spot and wipe it off with alcohol.—Michael Diratsouyan, Smyrna, Turkey.

FAILURES IN CASTING.—Many failures in casting may be traceable to the use of too large a sprue former. This permits the gold when in a highly molten state to descend a short distance in the large sprue hole and there to become lowered in temperature, thus forming in some cases an obstruction which blocks the passage from the crucible to the mold. So in all ordinary casting it is preferable to use a relatively small sprue former and one that is cylindrical rather than conical in form.—R. I. Wood, *Dental Review*.

INLAY INVESTMENTS.—A mixture of silex, 3 parts, and dental plaster, 1 part, by weight, makes an excellent and inexpensive investment compound for cast work. Mix to a creamy consistency, eliminating air bubbles by jarring plaster bowl on bench while stirring (never jar ring while pouring it). When wax has burned out, allow investment to cool down before casting, irrespective of casting method employed. This investment will not crack if properly mixed, and the castings will come out with a smooth, brilliant surface.—P. G. Puterbaugh, *Dental Review*.

TAKING PLASTER IMPRESSIONS.—In taking an upper impression patient should sit erect; tray inserted, pressed firmly to place and held with one finger on centre of palate; then incline patient very much forward to the point of gravitation. This position you will find very beneficial in relaxing muscles and preventing nausea. Do not remove until chemical action has made the tray very warm. A good story will help to pass the time, and if you gauge it correctly the climax will come just at the right time, and you will find the hearty laugh will assist in removing the tray more easily than a forced cough.—I. B. Carolus.

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## SOCIETY ANNOUNCEMENTS.



### ***Edmonton Dental Society.***

REPORTED BY F. A. FRENCH, D.D.S., SECRETARY.

**T**HE members of the Edmonton Dental Society at their last monthly meeting and dinner entertained as guests the Medical Inspector and members of the School Board.

The necessity and importance of the care of the teeth and the ducation of the child in oral hygiene were fully discussed.

Thanks to the good work and co-operation of Dr. Dunn, the Medical Inspector, and to an intelligent and enterprising School Board, it will not be long until the school children of Edmonton will reap the benefits to be derived from school clinics. In the meantime urgent and needy cases are treated free of charge in the offices of the members of the Society upon presentation of a card signed by the Medical Inspector or a visiting nurse.

### ***Annual Meeting Elgin Dental Society.***

**T**HE Elgin Dental Society held its annual meeting in Dr. Frank Bennett's office on Thursday, June 19th, 1913. The retiring President, Dr. T. C. Trigger, was in the chair, and reports from the several committees were received. Officers were elected as follows:

President—Dr. E. A. Clark.

Vice-President—Dr. H. H. Way.

Secretary-Treasurer—Dr. F. E. Bennett.

Programme Committee—Drs. Trigger, Kennedy, Bennett.

Educational Committee—Drs. Bennett, Way, Trigger.

Membership Committee—Drs. Lamley, Honsinger.

### ***The Panama-Pacific Dental Congress.***

**T**HE work of promoting the Panama-Pacific Dental Congress is progressing in a most satisfactory manner, and the Committee of Organization is pleased to report that up to date in thirty-eight States Executive

Committees have been appointed to co-operate with it in advancing the interests of the Congress.

Seventeen foreign states and countries and the island possessions of the United States have taken similar action, and the appointment of like committees in other States and countries is now pending.

It is hoped that within the next three or four months every State and country in the world where dental organizations are known to exist will be represented by an Executive Committee, the duties of which will be to promote an interest in the Congress and secure memberships and contributions to the programme.

Nearly \$13,000 has now been subscribed to the promotion fund, the Southern California Dental Association at its recent meeting having subscribed \$1,000 and its members as individuals nearly \$1,500 more.

The Pacific Coast States, aside from California, represented on the Board of Directors are doing their part, and the success of the Congress, so far as can be judged at the present time, seems positively assured.

### ***Annual Meeting Central Ontario Dental Society.***

**T**HE Annual Meeting of the Central Ontario Dental Society was held on June 27th, at the Hotel Mossop, Toronto.

After enjoying a sumptuous banquet, provided through the kindness of the Temple-Pattison Co., the following officers were elected:—

President—Dr. W. Adams, Whitby.

Vice-President—Dr. E. S. Barker, Stouffville.

Secretary-Treasurer—Dr. H. N. Wilkinson, Newmarket.

Executive—Drs. D. C. Smith, Stouffville; Ford Butler, Aurora; C. W. Ellis, Bradford; C. H. R. Clark, Newmarket, and J. W. Barker, Cammington.

Educational Committee—Drs. Smith, Clarke, R. M. Stewart, J. W. Barker, and Adams.

A splendid address was given by Dr. W. H. Doherty, of Toronto, on "Practical Plans for Dental Education of the Public." It is to be hoped that this address may be given wider circulation by being published in some of our dental magazines.

The meeting was brought to a close after a vote of thanks to the speaker of the evening and also one to the Temple-Pattison Co., which was responded to by Mr. H. P. Temple and Mr. J. Z. Henry.

H. N. WILKINSON, *Secretary, C.O.D.S.*



## PERSONAL PAGE



**D**R. J. G. MANNING has moved from Melville to Regina, Sask.

The dentists of Western Ontario are well represented at the military camp at Carling's Springs, London. Col. H. R. Abbott, of London, is in command of the 1st Hussars, the crack cavalry regiment of Western Ontario. Major H. F. Kinsman, of Sarnia, is instructor of musketry.

Capt. C. E. Sale, of Goderich, is in camp with the 33rd Huron Regiment, as is also Capt. W. J. Bentley, Sarnia, of the A. M. C. Capt. Bentley is looking after the dental needs of the two thousand men in the Carling's Heights camp.

Dr. B. E. Wilson, of London, is receiving congratulations on the arrival of twin girls.

Dr. E. A. Clark, of St. Thomas, was married on June 3rd, in Sherbrooke, Que., to Miss Leah Gwendoline Kerr.

Dr. R. D. Thornton, connected with the Toronto Municipal Clinic, was married on the 18th of June.

Dr. R. Lederman, of Milverton, was tendered a banquet at the Queen's Hotel previous to his departure for Regina, where he intends opening a dental office in the Westman Chambers. Mr. Jas. Torrance, M.P.P., acted as toast master, and the fifty guests present all voted the evening a great success. Dr. Lederman was presented with a gold-headed cane as a mark of the esteem in which he is held by the Milverton citizens.

Dr. Best is planning to open an office in Gretna, Man.

DR. J. R. DOYLE (R.C.D.S., '13) is opening an office in Rutlan Block, Port Arthur, about 1st August.

Dr. Fred. C. Thomson, brother of Dr. H. S. Thomson (President of New Brunswick Dental Society), recently graduated from Harvard Dental School, receiving the degree of D.M.D. Dr. Thomson was vice-president of his class for two years, and president of the Harriet Lowell Society for Dental Research, and Editor of the *Mirror*, which was published by the Senior Class of the School. ORAL HEALTH extends its congratulations upon such a record, and hopes soon to be able to report Dr. Thomson located in practice at some point in Canada.

Dr. R. A. Dunlop, Toronto, has left for a month in Bermuda.

Dr. Charlton Mills, Toronto, is spending a few months in the Southern States.

Dr. John F. Ross and wife, Toronto, left last month to spend three months on the Continent.

Dr. and Mrs. H. E. W. Richardson, with his father and mother, left Toronto last week for a couple of months' sojourn in the British Isles.

Dr. T. H. Wylie is in the Old Country bowling with the Canadian bowlers. Here's hoping, "Tom," that you will bring back to Toronto one of those gold medals.

The following graduates of the R. C. D. S. have passed the Alberta examination: Dr. J. Wright, Dr. J. H. Moore, Dr. McIntyre.

Dr. L. D. Hogan, of Walkerville, is reported to have a brand new baby son. We hope he may grow up as good a dentist as his dad.

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### Obituary.

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THE following tributes have been made to the memory of the late Dr. George C. Mathison by two of his confreres in Winnipeg:

With the death of Dr. George C. Mathison it is safe to say that Western Canada lost its most universally liked practitioner.

To meet him was to like him, broad-minded and sound in judgment, his opinion valued by all. He was associated with the writer on the Board of the Manitoba Dental Association for six years, and a strong friendship sprung up that lasted to the day of his death, which occurred on the 14th inst., at the early age of 37, after a very brief illness.

Excellent dentist, good fellow, staunch friend, it will be long ere those who associated with him will forget Dr. George Mathison.

Winnipeg, June 23rd, 1913.

G. F. BUSH.

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George Christie Mathison, second son of Mr. Robert and Mrs. Mathison, was born in London, Ontario, in 1876, but spent his boyhood days in Belleville, Ont., where his father was for many years Superintendent of the Deaf and Dumb Institute. Educated in the schools of Belleville, he entered the study of dentistry and graduated in 1896 from the University of Pennsylvania, and from the R. C. D. S. in 1897. He started practice in Winnipeg the same year. Owing to his professional ability, combined with his genial disposition, which made him a host of friends, he soon built up a fine practice. Among his confreres he was always a general favorite. He was indeed a most loveable fellow, good hearted almost to a fault. Many a young practitioner has he encouraged and inspired by his sunny nature and high ideals. He will be greatly missed in Winnipeg by the profession. His judgment in Dental Association matters was always sound and was much sought after. He was for six years a member of the Board of Directors of the Manitoba Dental Association.

He was a member of the Masonic Order and of the Independent Order of Foresters, of which his father is at present Supreme Secretary.

He married nearly three years ago Miss Katherine McGregor, who remains to mourn his loss.

Dr. Robert Mathison, of Kelowna, B.C., is a brother.

George Mathison is gone, but he leaves behind him sweet memories of his genial and kindly disposition and of his high sense of honor.

Winnipeg, June 25th, 1913.

K. C. CAMPBELL.

## ORAL HEALTH.

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Vol. 3                      TORONTO, AUGUST, 1913.                      NO. 8

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## EDITORIAL.

### *Fourth International Congress on School Hygiene.*

PREVIOUS meetings of this great Congress were held in Nuremburg, 1904; London, 1907, and Paris, 1910. The coming meeting, at Buffalo, August 25th-30th, held, as it is, at our door, presents an opportunity that should be taken advantage of.

The object of the Congress is the bringing together of all persons interested in the health of school children, a question that surely should be of vital interest to a greater number in the community than perhaps any other. The preliminary announcements contain such an array of speakers as could scarcely be attracted by any congress less world-wide in its interest. In addition, the scientific exhibit representing the best that is being done in school hygiene will afford a varied and concrete collection of methods and results, to many even more interesting and valuable than the addresses themselves.



The dental profession has been invited to participate in this meeting, and the dental section has been placed in charge of the National Mouth Hygiene Association. An extensive programme is being arranged for this section, together with an exhibit that should place this phase of child welfare work properly before the members and friends of the Congress. The tentative schedule of papers announces the meetings of the Oral Hygiene Section for Tuesday, August 26th, at 9 a.m. and 8 p.m., and Wednesday, August 27th, at 9 a.m. No member of the profession interested in the proper recognition of the health value of mouth hygiene should miss these meetings, if within reasonable distance of Buffalo.

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### ***Prevention.***

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**Y**EARS ago the practise of law consisted chiefly in getting clients out of trouble. The lawyer most proficient in this gentle art was the one most sought after. To-day, however, solicitors are constantly consulted and their advice sought with a sole view to "prevention." The most valued legal advisers to-day are those who practise prevention and keep their clients out of trouble.

In the practice of medicine *diagnosis* and *treatment* have always loomed larger than *prevention*. The physician is not consulted until the patient is sick. Preventive medicine has, therefore, taken largely the form of community effort. Physicians are, however, more and more directing their attention to prevention as applied to private practice.

Principles of prevention are much more applicable to the practice of dentistry than to either law or medicine. The dental practitioners of the future whose services will be most valued and in greatest demand will be those who practise preventive dentistry and maintain the oral cavity free from dental decay and disease.

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### ***A Problem in Economics.***

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**T**O those who find it expedient to make an "economic" argument in favor of dental clinics the following points gleaned from an address by A. Irwin, D.D.S., may be of interest:

Do dental clinics pay—in dollars? They do! Disease means expense, and any method of preventing it pays.

Every argument in favor of general hospitals may be urged in favor of dental clinics, and with greater force, for the former set out to “prevent” and the latter to “cure.”

Millions of dollars are spent annually in fighting the “white plague.” Why not spend some of this in exterminating the frequent cause of this infection in the mouth?

Great financial losses have been entailed in the closing of schools through epidemics that have been traced to the mouths of the children.

Individual children are retarded through odontalgia and time lost from school.

Industrial loss to employers and the community through absence from work of employees. In Germany this has been shown to amount to millions of dollars annually.

Loss to employer through failure of employee to “make a sale” because of offensive oral condition.

As one writer has said: “The little outlays I have made for dental service have been the source of more satisfaction and peace of body than any coin of the realm I have ever been instrumental in placing in circulation.”

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### ***Oral Hygiene Reports.***

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#### *Saskatoon, Sask.*

When the fall term opens a dental chair will be found in one of the rooms of the King Edward School, where dental surgeons of the city have agreed to alternately give their time so that for an hour every day pupils may have their teeth examined and, for those unable to pay, treated without cost.

#### *Louisville, Ky.*

The free dental clinic established under the auspices of the Jefferson County Dental Society is now nearing the close of its first year and has proved to be a large factor in the education of the children of Louisville.

In the beginning private practitioners gave time to the clinic, but this was not found very satisfactory, as so many different men were working upon the same child and treating the same tooth. One man has now been employed to

work certain fixed hours, and this plan has proved much more satisfactory.

The work has grown so rapidly that latterly it has required the services of three dentists where one was formerly employed.

*Bridgewater, N.S.*

On May 26th Dr. H. L. Mitchener, of Bridgewater, gave an illustrated lecture to young people from 10 to 16 years of age.

*Sydney, N.S.*

On the 13th and 14th inst. the moving picture, "Tooth-ache," was shown under the auspices of the Nova Scotia Dental Association to over 7,000 people. The members of the profession, as well as the public, are delighted with it and consider it the best educational idea yet produced.

*Halifax and Windsor, N.S.*

On the 23rd and 24th insts. the moving picture film was shown in Windsor, N.S., and in Halifax 25th and 26th.

Arrangements are being made for a lecture with lantern slides and the film before the Summer School of Science, which meets in Halifax in July.

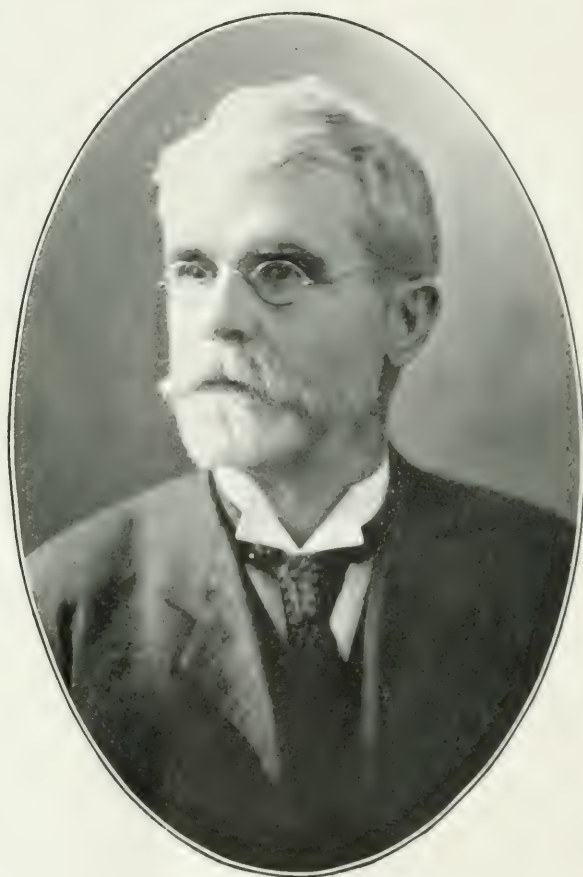
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Burglarizing dental offices is becoming quite the vogue out West. A short time ago eleven dental offices in Vancouver were ramsacked of over \$600 in gold, and the following week six Victoria offices were broken into and considerable gold taken. About the middle of May the Enderton Block in Winnipeg was burglarized, special attention being paid to dental offices located in the building. In all six dental offices were entered and precious metals stolen. The wave seems to be travelling east.

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“Age is an opportunity no less  
Than youth itself—though in another dress ;  
And as the evening twilight fades away  
The sky is filled with stars invisible by day.”

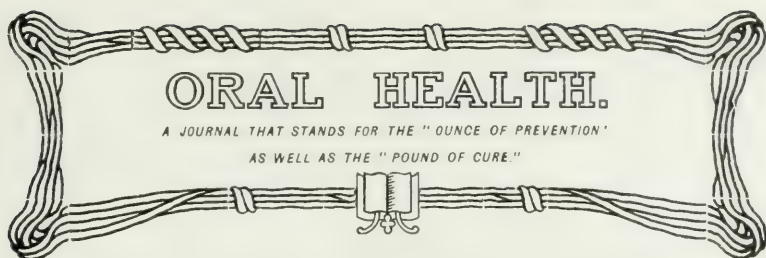




The Late HIBBERT WOODBURY, D.D.S.

Halifax - Nova Scotia

*(See page 340)*



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## ***Scientific Foundation and Research Commission.***

By WESTON A. PRICE, D.D.S., CLEVELAND, OHIO,  
Chairman National Dental Scientific Research and  
Foundation Commission.

We publish herewith a report of the work of the Research and Foundation Fund Commission, a commission inaugurated by the National Dental Association. The report was prepared by the Chairman of the Commission, Dr. Weston A. Price, who has unselfishly labored in research work for many years.

Dr. Price is a brother of Dr. Frank Price, of Toronto, and is widely known throughout the entire dental fraternity. The dental research question is being met in a large way by the commission, and the project as outlined cannot fail to be the great success the greatness of the work deserves.



Weston A. Price, D.D.S.

THE success attained by the Scientific Foundation Fund Committee of the National Dental Association in the securing of money for a Foundation Fund for research and of the free use of many thoroughly equipped laboratories was sufficiently great that the House of Delegates, which is the official body of the National Dental Association under its reorganization, by unanimous vote, changed its constitution to provide for a Commission of twenty five men to immediately place into operation the complete plan of the Scientific Foundation Fund Committee for supporting and establishing exhaustive research, and for the securing of endowments for a National Dental Research Institute.

The constitution was amended as follows:

"The Committee on Scientific Foundation Fund shall be changed to a Commission to be known as the National Dental Scientific Research and Foundation Commission. It shall consist of twenty-five members, who shall be elected by the Board of Trustees, not more than two of whom shall be from any one State. They shall serve for five years, except that of the first Commission five shall serve for one year, five for two years, five for three years, five for four years, and five for five years, as shall be designated when they are elected. They shall meet annually at the time of the meeting of the National Dental Association and at such other times as shall be designated by their Executive Board.

The duties of the Commission shall be to raise funds for carrying on exhaustive dental and oral research, to disseminate scientific knowledge, to support, establish and encourage research and such other duties as shall pertain to the furthering of this cause. They shall select from their number an Executive Board of five members, which shall, when the Commission is not in session and has not given specific directions, have general control of the administration of the affairs of the Commission and general supervision of all arrangements for administration, research and other matters undertaken or promoted by the Commission. They shall organize and incorporate a corporation to be known as the National Dental Research Foundation and Institute, or such other name as the Commission shall select, which corporation shall receive, invest and disburse all the moneys provided by the Commission and by themselves. They shall organize this corporation in accordance with the laws and requirements controlling such institutions, except that not less than one-third of the trustees of said corporation shall be provided by the National Dental Association. This corporation shall seek bequests, endowments, fellowships and such other contributions as shall perfect the purpose of the National Dental Association. They shall make a written annual report to the Commission and to the National Dental Association.

The Commission was elected, met and organized, selecting their officers and Executive Board. The personnels of the Commission elected are as follows:

Weston A. Price, Cleveland, Ohio, Chairman.

Thomas P. Hinman, Atlanta, Georgia, Vice-Chairman.

Clarence J. Grieves, Baltimore, Md., Secretary and Treasurer.

John V. Conzett, Dubuque, Iowa, Member of Executive Board.

E. R. Warner, Denver, Colorado, Member of Executive Board.

Edward C. Kirk, Philadelphia, Pa., editor *Dental Cosmos*.

Wm. Carr, New York City, ex-President 1907.

Truman W. Brophy, Chicago, Ill.

G. V. Black, Chicago, Ill., ex-President 1900.

M. H. Fletcher, Cincinnati, O.

Thomas Hartzell, Minneapolis, Minn.

Arthur R. Melendy, Knoxville, Tenn., ex-President 1911.

Edward S. Gaylord, New Haven, Conn., ex-President 1910.

Henry C. Ferris, New York City.

Charles C. Allen, Kansas City, Mo., editor *Western Dental Journal*.

Frank O. Hetrick, Ottawa, Kansas, ex-President 1912.

Marcus L. Ward, Ann Arbor, Michigan.

Frank L. Platt, San Francisco, Cal., editor *Pacific Dental Journal*.

C. S. Van Horn, Bloomsburg, Pa.

R. H. Volland, Iowa City, Iowa.

C. M. McCauley, Abilene, Texas.

George E. Hunt, Indianapolis, Ind., editor *Oral Hygiene*.

Eugene Smith, Boston, Mass.

J. E. Chase, Ocala, Florida.

Samuel H. McAfee, New Orleans, Louisiana.

The plan pursued by the Foundation Committee was adopted, namely, to raise funds from three sources: first, from the members of the dental profession by their giving, as nearly universally as possible, a voluntary contribution each year for five years to start the work. Second, a popular fund from the laity, to be obtained largely by the activity of the members of the dental profession; and, third, an endowment fund to make the work permanent.

The committee had already secured contributions exceeding \$15,000 in signed individual pledges covering a period of five years, or \$3,000 per year, from the few societies to which the chairman was able to go and present the matter, as follows: Cincinnati, \$2,767, with the first year's payment entirely paid in; Columbus, \$1,200; Toledo, \$500; Cleveland, \$4,010; Alumni Association of the Dental Department of the University of Iowa, \$500; St. Louis Dental



Society, \$500; Alumni Association of the Louisville Dental College, \$500; Indiana State Dental Society, \$800; Washington, D.C., \$705; Pennsylvania State and Susquehanna Societies, \$782; contributions at the Kansas City National meeting, \$2,600; miscellaneous, \$500; total, \$15,364. It is expected that each State will provide in voluntary contributions an amount equal to five times the number of dentists in the State. On this basis Ohio, with 2,400 dentists, has already provided over \$9,000 of her \$12,000 proportion. The Commission has decided that the need for immediately assisting dental and oral research is so great that they will begin work at once by providing technicians or laboratory assistants, to make possible a much larger output from some of the men who are already voluntarily devoting a part of their time in dental researches and doing excellent work. This definite assistance to research work will be done to the amount of resources already available; however, present contracts will have to be limited to a total of \$4,000 for one year. This will be used to hire expert assistants for helping those who are doing excellent work and with available good laboratory equipment in the following subjects: Systemic infections from dental origin, pyorrhea alveolaris and kindred affections, etiology of caries, salivary analysis, etiology of erosion, dental amalgams, metallurgy for substitutes for platinum, etc., and the relation of foods to defective tooth structure. Ten of these expert laboratory assistants or technicians are greatly needed at once, and the \$4,000 available now will only permit of four or five of these. It is greatly desired that the members of the profession will arrange to have the subscription plan thoroughly organized at once in their respective conventions, so that the others can be placed yet this fall. It will require about an average of \$5 per active member of dental societies to make up for those who cannot be reached. The subscriptions are running from \$1 to \$100 per year for five years. Literature and subscription blanks will be furnished by writing to the Chairman of the Commission.

This is only preliminary work, and the Commission will engage the part or entire time of some expert research workers as soon as the funds can be obtained. The Chairman has already secured for the National Dental Association privileges for research in the following laboratories and institutions: the Cushing Laboratory for Pathological Research, Cleveland; Case School of Applied Science Research Laboratory, Cleveland; Iowa State University Re-

search Laboratories; Michigan State University Research Laboratories; Hygienic Department of the U. S. Department of Health of Washington; Bellevue Hospital Research Laboratory, New York; Cincinnati Hospital Research Laboratory; Park-Davis Research Laboratory, Detroit; University of Chicago, and several other competent institutions.

There are also a number of men with the research spirit found to be available whose heart is so engrossed in that work that they are now devoting much time and energy to that work without compensation, but who have to struggle for the necessities of life. The Commission will place some of these men in these available equipped laboratories as soon as funds can be secured. We do not present it as a professional duty simply, but as a great personal opportunity; we do not ask of you self-sacrifice, but self-realization, for it is our privilege by supporting this work to help to emancipate society from its most universal malady, and also, the one that probably causes more total suffering, directly and indirectly, than any other.

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As an indication of the attitude of the daily press toward the National Scientific Foundation and Research Commission, the following editorial reference appearing in the Bay City Times of July 15th, 1913, is of interest:

"Practically all the exhumed skulls of persons who lived in America before the food-adulterating, bad and hot air breathing, tubercular white man took possession of it reveal perfect teeth. To-day 90 per cent. of the teeth of America are defective. What has caused the change? Here, surely, is a field of inquiry ripe for the harrow; and it is good news that the National Dental Association is to assess each member for a fund to be spent on looking into the causes of tooth decay.

"Preventive dentistry is the twin sister of preventive medicine, and it is time that the two were travelling closer together. You're pretty sure, sooner or later, to find a lot of other troubles in the human system when the sentinel teeth, which stand guard against the invading germ enemies at its very entrance, are themselves infected by neglect and rot.

"So it wont do just to tinker a bit when our teeth get so bad we have to do something about them. There is needed a comprehensive studying out of why this teeth trouble is so general, and then collective as well as individual application of remedy."

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## ***The Locus Minoris Resistentiae in Pyorrhea Alveolaris.***

BY EDWARD C. KIRK, D.D.S., Sc.D., PHILADELPHIA, PA.

(Read before the Seventh and Eighth District Dental Societies of the State of New York, at Rochester, November 14, 1912.)

**A**T the very outset let me forestall what in simple justice I assume to be no more than a proper critical attitude in your minds, by apologizing for the title of this paper. I was told by the chairman of your Executive Committee that when he attempted to telegraph the subject of this communication to one of the gentlemen who has kindly consented to discuss it, the intelligent agent of the telegraph company said to him, "We don't take night messages in a foreign language." I anticipate no serious difficulty in clearing up whatever obscurities the title may present to your minds, but I feel beset with more or less doubt concerning my ability to elucidate the subject that it involves. I shall, therefore, confine myself to the effort to set before you some data and certain deductions therefrom which I hope will present the study of what we call pyorrhea alveolaris from an angle of view that may help us to get a little additional light on its perplexing problems.

Let it be understood that the term "Pyorrhea Alveolaris" is here used to designate that group of destructive, inflammatory disorders affecting the retentive structures of the teeth by which degeneration and necrosis of their attachment is produced and ultimate exfoliation of the teeth takes place—a series of phenomena dependent upon bacterial infection of the retentive structures for its exciting cause. I am well aware that the foregoing characterization is imperfect as a general definition applicable to all of the pathological processes that may eventuate in exfoliation of the teeth; but the same objection may be urged against the term pyorrhea alveolaris itself, or indeed against any general definition of these alveolar disorders in the present state of our knowledge concerning their etiology and pathology. Furthermore, I wish to exclude from present consideration the group of destructive gingival disorders that obviously

result from the mechanical irritation due to impingement of salivary calculus upon the gingival and alveolar tissues, and to confine attention wholly to the form of pyorrhea alveolaris that is manifestly a pus-producing and therefore destructive inflammatory process.

The very fact that, by reason of the light thrown by modern scientific investigation upon the causes of pus formation and the inflammatory reactions involved, we are able to classify certain forms of pyorrhea as pus infections, at once greatly simplifies the problem of their etiology and pathology, and is fraught with suggestiveness as to their therapeutic treatment.

Viewed, then, as a destructive inflammatory process of bacterial origin, or, otherwise described, as a pus infection, the etiological problem with which we are concerned is that of susceptibility of the gingival tissues to infection by pathogenic organisms of the pus-producing type.

The history of the germ theory of disease causation is a long and interesting one, with its beginnings in the superstitions and misty obscurities of antiquity, surviving and gradually taking on more definiteness until the researches of Koch in the last quarter of the past century finally evolved the demonstration of the fact that these low organic forms were in certain instances the exciters of those reactions in the higher animal organisms which constitute the phenomena of disease. Koch's discoveries and original methods of investigation made possible the systematic study of the whole field of bacteriological activity, and bacteriology as a department of biological science may be said to have had its birth in his work.

In the evolution of the investigation of the relations of bacteria to disease causation, two distinct points of view have characterized the history of the subject. The first may be designated as that which was concerned with the modus of disease production through the agency of the bacteria, while the second involved a study of the defensive agencies of the organism against bacterial invasion. The first point of view was the necessary result of lack of knowledge of the nature and biological activities of the bacterial exciters of disease action—a lack which, through over a quarter of a century of research by a large army of skilled scientific investigators, has been eliminated by the substitution of a rich store of data covering the life-processes and disease-producing activities of a long list of pathogenic bacteria.



So complete is the testimony that in general terms we may say that the principles by which pathogenic bacteria induce disease reaction are now in a broad sense clearly understood.

In the course of investigation of the modus of action of disease-producing bacteria the fact constantly obtruded itself that a given form of organism did not always produce the same disease reaction in several individuals, or at all times in the same individual; from which it was later demonstrated that there may be not only a variation in virulence of a given bacterium, but likewise a wide range of susceptibility among individuals, and in the same individuals at different times, to infection by a particular kind of organism. It is the discovery of these fundamental facts governing the reactions of the higher organisms to bacterial activity, the conditions which determine the balance of vital potential as between the higher organisms and pathogenic bacteria—in short, the question of susceptibility and immunity to bacterial invasion—that constitutes the second point of view which in an historical sense I have already referred to; and it is the vital problem of susceptibility and immunity with which medical science is at present most intensely concerned.

The study of pyorrhea, as the subject has presented itself from an historical viewpoint, seems to have evolved in much the same way that I have indicated with reference to the general attitude of investigators of the germ theory of disease. Our historical records show that in the first period attention was directed almost wholly to the objective fact that deposits of tartar, salivary calculus, were an obvious cause of destruction of the retentive tissues of the teeth, and that such teeth eventually fell out. Tartar thus became recognized as the general cause of the disease. Later it was observed that many teeth were lost, with coincident pus formation, yet without tartar deposits in such obvious quantity as to satisfactorily account for the activity of the inflammatory reaction that had characterized the destructive process; and still later, observations were reported of cases of an atrophic form of gingival destruction in which neither pus nor tartar were obviously present. Thus we have come to realize that we are dealing, not with a single disorder with well-defined and characteristic symptoms, but with a group of disorders having certain pathological features in common, but sufficiently distinct in etiology and clinical manifestations to entitle them to separate classification.

In discussing the type of gingival pyorrheal disease to which I have limited this paper, I wish to direct attention more particularly to the question of the factor of susceptibility in the retentive tissues rather than to the question of the nature of the bacterial exciter of the inflammatory process—which limitation, I may state incidentally, is the justification for the cumbersome title of this paper.

The view now held by many students of the subject that the teeth are “end-organs” as designated by Talbot, and that their retentive tissues, including the alveolar borders of the jaws, are provisional structures intended to subserve a relatively temporary purpose, is a view which has never appealed to my general conceptions of the ordinarily high standard of efficiency of nature’s economics. That point of view has always seemed to me to be open to the suspicion of special pleading in the effort to find an explanation for a group of phenomena into the antecedents of which we have not as yet delved deeply enough to discover their true causes. The same kind of reasoning has been applied to the loss of teeth from caries by a learned medical writer, who asserted, even since the death of Miller, that caries of the milk teeth was nature’s method of getting rid of the deciduous denture, which was intended only to subserve a temporary purpose. If we look farther for the conditions that give rise to the loss of the teeth by pyorrhea we shall probably find eventually that the inherent weakness of the alveolar structures, if it exist at all, is a relative weakness, and that there is no more reason *per se* why the teeth should be lost by pyorrhea than that they should be lost by caries, or that the patient himself should die of tuberculosis or diabetes mellitus or any other nutritional or infectious disorder.

Assuming that in the normal individual the physiological processes are balanced upon a plan sufficiently high to maintain the defensive forces of the economy at a point of efficiency that will protect the individual against bacterial invasion, then the normal individual does not have pyorrhea. We see many such mouths—free from even a suspicion of pyorrheal symptoms. On the other hand, malnutrition in any of its forms—acute illnesses, prolonged fevers, rheumatism, gout, syphilis, tuberculosis, or unhygienic local mouth conditions, a filthy buccal cavity, any of these factors being present—may develop a coincident pyorrhea, the objective features of which, its character and course, and its response to therapeutic treatment, will be in no small degree determined by and be symptomatic of the general conditions

that gave rise to the attack.

In the character of the local phenomena developed during the course of the attack we frequently meet with manifestations of the factor of relativity of resistance to the progress of the disorder in the involved tissues.

In the atrophic form characterized by decalcification of the alveolar bone without noticeable pus formation or pockets, followed by shrinkage of the gum tissues with or without terminal infection and pus formation, we are dealing with the local manifestation of a general malnutritional state, accompanied if indeed it is not caused by auto-intoxication. Just what are the poisonous substances contained in the blood stream that, when carried to the alveolar tissues, set up the decalcification process, the halisteresis of the bony sockets of the teeth, is not known, nor do we know by what agency these toxic irritants effect their results. These are problems for the physiological chemist and histopathologist, but enough is known of the tissual derangements induced by toxic substances in the blood plasma from the studies of Bouchard, Lauder Brunton, and many others to warrant us in holding to a belief in the sufficiency of auto-intoxication as a cause of this form of pyorrheal disorder, and that the frequency of its association with cases of evident auto-intoxication is more than a mere coincidence. Auto-intoxication, broadly speaking, is a result primarily of faulty nutrition by which the processes of metabolism are imperfectly carried on, and poisonous substances, toxins, leucomains, etc., are taken up by the blood stream and carried to the tissues, producing a variety of reactions both functional and morphological. Incidentally the resistive forces of the organism are lowered, the defensive bodies of the blood are weakened, and susceptibility to bacterial invasion is consequently increased. Infection brings its addition of toxic substances to the blood plasma with characteristic acute disease reaction of the tissues at the field of invasion, and the tissues succumb in the order of their relative resistive powers and with clinical manifestations conditioned by their histological structure.

From the point of view of this general survey of the principles underlying the inflammatory process let us consider some of the phenomena of pyorrhea in their bearing on the question of the points of diminished resistance in the tissues in which the disorder is locally expressed.

In 1887, G. V. Black, in his work entitled "A Study of



the Histological Characters of the Periosteum and Peridental Membrane," described certain structures which at that time he designated as lymphatic glands of the peridental membrane, a study which he has further elaborated in a later publication, "The Fibers and Glands of the Peridental Membrane" (*Dental Cosmos*, 1899, Vol. XLI., p. 101), in which he has somewhat modified his earlier statement as to the lymphatic glandular character of these bodies. The previous studies of Magitot and Malassez and the exhaustive investigation of Von Brunn, published the same year as Black's' original communication, point very strongly to the conclusion that these structures described by Black are epithelial "rests," debris or remnants of the epithelial sheath of Hertwig, the embryonal tissue of the enamel organ. The origin and histological character of these bodies found embedded in various parts of the peridental membrane is of considerable importance in connection with their susceptibility to infection by pathogenic organisms. Black reports a direct microscopic observation made upon a section of an extracted tooth with a portion of the alveolar wall and peridental membrane adhering, in which he found these so-called glands filled with micro-organisms, and in his later paper on the subject (*loc. cit.*) he says: "It seems to me very certain that the disease which I have described as phagedenic pericementitis has its seat in these glands. The location of the initial lesion and its progress to the formation of deep pockets indicates that the beginning is in these glands, and that in its progress they are followed into the depths of the alveolus, the fibers and adjacent tissue suffering by reason of their proximity."

My own observations from a clinical standpoint are wholly in accord with the view of Black here quoted, with the understanding that it applies only to that type of pyorrhea which is a true pus infection of the deep-seated and pocket-forming variety.

If these so-called glands of the peridental membrane are epithelial rests, remnants of an embryonal tissue that has subserved its purpose, they are degenerative in character and, like all other degenerative tissues, are lacking in vital resistance. They therefore are readily infected by pathogenic bacteria when the general resistive forces of the organism become lowered to a degree that permits bacterial invasion at any point. Or, otherwise stated, a degenerative tissue being relatively weakest is the first in order to suc-



cumb to bacterial invasion when invasion through any generally acting cause becomes possible. Black's observation of the fact that these gland-like structures of the peridental membrane were the nidus of bacterial infection in the specimen examined and reported upon by him, I regard as extremely important and suggestive. It is quite true that a single observation is wholly insufficient as a basis upon which to establish a generalization, nevertheless it constitutes a scientific datum that must be given its due weight of consideration; and even should it serve only as a point of departure for further investigation, a single positive observation of this character viewed in its proper relationships is often of the utmost importance.

Granting that the embryonal origin and character of these gland-like bodies of the peridental membrane stamp their cellular elements as degenerative in type, and therefore of inferior resistive power toward bacterial invasion, then we have accounted for a *locus minoris resistentiæ* in the peridental membrane, and in the light of the histological distribution of this degenerative tissue in the membrane itself, as described by Black, we are able to account rationally not only for the major features of the etiology of the disorder, but for many of its characteristic clinical phenomena. I am not able to find a fairly close study of the literature that any observer other than Black has reported upon the infection of the gland-like bodies of the peridental membrane.

A. Hopewell-Smith, in the report of his studies of sections of mandibles with teeth *in situ* affected with pyorrhea (*Cosmos*, 1911, Vol. LIII., p. 404) in describing the "apical space," says: "The gland-like bodies, which may be of the nature and perform the functions of a lymphatic system, are increased in numbers and very prominent in the sections. The latter frequently branch and are filled with small cells."

In the article quoted the author reports the presence of bacteria in large masses or clumps visible in his sections when examined by a one-inch objective, but makes no report of specific findings of pathogenic bacteria in the gland-like structures of the peridental membrane as described by Black.

In the only other report of a direct microscopical study of the retentive structures of the teeth affected by pyorrheal inflammation, of which I have any knowledge, that of Pro-

fessor Znamensky of Moscow University (see *Jour. Brit. Dental Association*, Vol. XXIII., October, 1902, page 585, the examinations of tissues made by him, in connection with Professor Nikiforoff, of the same university, were all made under magnifications ranging from 80 to 360 diameters, a magnification quite insufficient to determine the question of the infection of the glandular structures under consideration, and while we are left to make the necessary and logical deduction that the inflammatory process is the result of infection by pyogenic organisms, we are still in the dark regarding the modus of infection, and especially with regard to the particular tissue constituting the avenue through which infection takes place—in other words, the tissue of greatest vulnerability, in the dento-alveolar structures. It seems to me to be of the utmost importance that more light should be thrown upon this fundamental question, for, given the fact of bacterial invasion of the tissue and the causes leading to it, then the balance of the inflammatory process, its nature and results, will become reasonably clear.

Black's studies point to the conclusion that these gland-like bodies of the peridental membrane surround the tooth-root as a sort of reticulum ramifying throughout the peridental membrane; and if, as he believes, they are the seat of that form of pyorrhea which he designates as phagedenic pericementitis, a belief with which for the reasons already stated I am in sympathetic accord, then we can understand not only the pocket-forming tendency of the disorder, but its pathological identity with the condition designated by D. D. Smith as pericemental abscess, known otherwise and frequently reported as "abscess upon teeth with vital pulps." Invasion of these glands by pyogenic bacteria sets up suppurative inflammation the clinical phenomena of which are determined by the depth and rapidity of the infection. Thus the disorder may be ulcerative in type where the invasion is superficial, or it may take on an abscess character when the invasion is deeper; and whether the discharge of the purulent exudate takes place, on the one hand, between the cementum of the tooth and its investing membrane, or, on the other hand, through the gum tissue forming a free fistulous outlet upon the gum surface away from the gingival margin, has thus far determined whether we designate the resulting lesion as a pus pocket or a pericemental abscess respectively.

In presenting for your consideration the foregoing aspect of the pyorrhea problem you will recognize that I regard

the disorder as a local lesion symptomatic of a constitutional aberration from normality, a nutritional vice having a local expression. I am quite well aware that the data which I have presented to you concerning the probability of a *locus minoris resistentiae* in the tissues which are the seat of the local lesion are meagre and unsatisfactory in the sense that they fall short of being conclusive. I have, however, been emboldened to set this view of the subject before you in the hope that it may lead to more exhaustive investigation of the histo-pathological side of the question, to the end that the truth concerning it may be brought to light. My long and careful study of the clinical phenomena involved encourages me to believe that further investigation will demonstrate the correctness of Black's single observation, and that we shall find that the gland-like bodies of the periodontal membrane are the weak points, the tissue of greatest susceptibility to pyorrheal infection.

*(The discussion following the reading of Dr. Kirk's paper was most interesting and helpful and will be published in its entirety in October Oral Health.)*

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### **Would Job Remain Patient?**

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**A**TTORNEY FRANK P. SLATTERY, of Wilkesbarre, in welcoming the Susquehanna Dental Society, said that it was narrated in the Old Testament that Job was afflicted with all the humors of the flesh and suffered the tortures of the damned for his Master's sake. He has come down to us as the personification of patience. Yet no self-ordained reviser of Sacred Writ in his wildest wanderings has had the temerity to represent that Job had the toothache. If he had felt the shock like every mortal who preceded and succeeded him he would have yelled for mercy. Like the street urchin, he would have had the aching molar removed and would have asked leave to take it home so that he could fill the pesky thing with sugar and see it ache.

## *The Teeth and Their Care.*

STEPHEN PALMER, D.D.S., POUGHKEEPSIE, N.Y.

The following illustrated address was delivered before the senior pupils of the Poughkeepsie High School, Poughkeepsie, New York. Frequently dentists are asked to give lectures to school pupils and Dr. Palmer's address is published in "Oral Health" in the hope that it may serve as an example of the ground such a talk may profitably cover. Until the authorities adopt a proficient course in physiology and hygiene such lectures should be given in every school. Should the opportunity present itself do not refuse to undertake the large service such an address is sure to render.

### **Y**OUNG Ladies and Gentlemen of the Poughkeepsie High School:

It is a pleasure, and I consider it an honor to address you this afternoon, and, as I believe, upon one of the most important subjects pertaining to your future welfare and health.

I think it was Thanksgiving Day, last November, as I was walking leisurely along Main Street, an automobile stopped near the curb, and I heard my name, and I was then asked to come here some time and talk to you.

I did not say "Yes," but just the same not long afterward I saw a list of subjects and names in the daily press and my name among them, so I could not avoid coming here at the time appointed.

Before entering upon the subject of the afternoon paper I am going to give you just a short resumé of the history of dentistry and the methods of the ancients, and then I feel sure you will all be thankful you are living at this present age, and not thousands of years ago.

I doubt if any of you realize that dentistry was practised way back in the year 3100 B.C. Yet it is a fact, and in the British Museum in London and other great museums abroad you may see many of the crude instruments and appliances used by the Etruscans and Egyptians in those remote periods.

Dr. Farrer, in endeavoring to trace the art of dentistry back to the times of Moses, found many amusing and interesting accounts of methods and remedies.

Gnaeus Marcellus Empiricus of Bordeaux recommended the following remedy for toothache:



“Whilst in the open country, one must take a frog by the head, open its mouth and spit into it, then having begged the animal to take the toothache with it, must replace it on the ground and let it free.”

The Etruscans considered it very beneficial for toothache, “To bite off a piece of wood, which has been struck by lightning, and to touch the sick tooth with it, but, in biting off the piece of wood, it is necessary to keep both hands behind the back.”

Dr. Guerini of Naples records the following facts:

“There lived in Aversa a small town near Naples, a certain violin player, Don Angelo Fontanella, who professed himself to be the possessor of an infallible remedy against toothache. When summoned by the sufferer, he carried with him, in a bundle, a tile, a large iron plate, a funnel, a piece of beeswax, and a small package of onion seed.

“Having placed the tile on the table, the iron plate was put upon it, after it had been heated red-hot. Then the operator let a piece of beeswax fall upon the red-hot iron plate, together with a certain quantity of onion seed. Having promptly covered the whole with the funnel, and making the patient approach, he brought the apex of the funnel close to the sick tooth in such a way as to cause the prodigious, if somewhat stinking, fumes produced by the combustion of the wax with the onion seed to act upon it. After the patient declared that he no longer felt the pain, Don Angelo, with a self-satisfying smile, turned the funnel upside down and showed on its internal surface a quantity of worms, which he affirmed had come out of the carious tooth. Great was the astonishment of the patient and the bystanders, none of whom raised the least doubt as to the nature and origin of those small bodies, no one having the faintest suspicion that these, instead of coming from the tooth, might come from the onion seed.”

We could spend the whole afternoon enumerating peculiar remedies of the ancients, but by so doing the important subject of the hour would be neglected.

“The Teeth and Their Care” is the subject of the afternoon.

Sound teeth and clean mouths are as necessary for the maintenance of public health as are any systemic conditions known, and in fact I believe they are the *most* important, for the teeth are the organs of mastication and the founda-

tion of future health.

Away back in the time of Henry II., who reigned in England in the 12th Century, the Archbishop of Canterbury, one Thomas a Becket, was murdered at the royal instigation. He became a great saint. Chaucer, in his "Canterbury Tales," tells of a crowd of story-telling people who made a pilgrimage to his tomb. The old chronicles tell us that at his murder Sir Thomas had on a hair shirt which he had worn for two years without removal. Think of it! And yet he was Archbishop of Canterbury and, next to the king, the greatest man in England, and one of the most powerful men in Europe.

Such were conditions a long time ago. We have since learned that soap and water are essential if we desire good health, but many have not yet learned that it is as necessary to keep the mouth clean as the body. Yes, and more necessary. A boy may attend school every day in the year with a dirty face and, provided he is not sick at Christmas time, it may be washed, and he suffer no ill effects. But let him neglect his teeth for that length of time and they will carry the marks of neglect the remainder of his life.

In the 12th Century Sir Thomas a Becket was a gentleman, though he only changed his shirt once in two years, and probably never brushed his teeth in all his life. To-day we have a different standard. If you wish to be counted a lady or gentleman, and associate with such, your teeth must have care.

Many people of middle life and old age are suffering with chronic indigestion because, in their younger days, the teeth were neglected and left in a condition unfit and unqualified to fulfill their masticating duty.

Our Creator provided each little mouth with twenty temporary teeth. Why? Because they are necessities, required by the boy or girl to prepare food for further digestive processes and for assimilation.

Our Creator provided each little mouth with twenty permanent teeth, to which a little later will be added four more. Why? To assist you through life to properly prepare food by mastication, for further digestive processes, and finally assimilation.

To remove *one* of the twenty temporary teeth by extraction before they have served the child the allotted number of years, or to extract *one* of the twenty-eight permanent teeth you each possess now, is ignoring natural principles

and interfering with the plans and breaking the rules laid down by our Maker.

Bear in mind, boys and girls, a dental surgeon's duty is not to destroy but to preserve the teeth.

The art of dental surgery is not to remove teeth, but to restore them to normal shape and condition, and also to restore the oral cavity to a healthy condition, and to give instruction in the means by which the mouth may be kept in that condition.

I have a number of lantern slides with me, and if the pictures can be thrown on the screen now we shall, by their aid, endeavor to make what I have said, and what I am now going to say, more clear.

Plate 1.—This first picture is a copy from a vase, showing a Seythian dentist operating about 300 B.C.

Plate 2.—Shows you the skull of a babe at birth.

Plate 3.—Tells you approximately the time of eruption of the temporary and permanent teeth. Boys, if you are a little uncertain as to the age of a certain young lady in your class, just remember this, and look at her teeth, and you will know it.

Plate 4.—This slide shows you the two rows of perfect temporary teeth, twenty in all.

Plate 5.—This picture shows you the temporary teeth and the roots, both upper and lower.

Plate 6.—This picture is of a skull of a child of nine months, showing the temporary teeth in process of eruption.

Plate 7.—A skull of a babe one year old, with the outside plate of the bone removed as in the previous picture, showing some teeth unerupted, and here you note the presence of the sixth year or first permanent molar in course of formation. This tooth will be shown later and explained more fully.

Plate 8.—This is a similar picture, showing the teeth at the age of one and a half years. Note the advance in eruption and the presence of formation of some of the permanent teeth.

Plate 9.—This is a similar view, at the age of three and one-half years. Note the advance in eruption and the presence of formation of some of the permanent teeth.

Plate 9.—This is a similar view, at the age of three and

one-half years. Note a similar process as in the other picture. Eruption and formation are now still further advanced.

Plate 10.—This view shows the condition at six years of age, and here you find the six-year or first permanent molar erupted, and the formation of the twelfth year molar noted.

Plate 11.—This view shows a cast of the same mouth shown in slide No. 4, but the six-year molar has now erupted.

We are now at the one important point of my whole lecture, and this is a good time to dwell upon it.

This first, or commonly called six-year, molar (because it erupts at about the sixth year) presents itself, as you notice, just back of the temporary ones at each end of each arch—four in all. As it erupts without replacing a temporary tooth, it is usually considered a temporary tooth by people in general, but it is the most important of the permanent teeth. It appears but once and is not replaced. They are the most essential teeth of the whole thirty-two, as they are the keystones of the dental arch (just like a keystone in an arch of stone), placed there to strengthen and complete the symmetry of the arch.

Forming and erupting during the time of development of the jaw, they are the most important factor in its proper formation, and should be zealously guarded. Appearing during the delicate child life, it is much more susceptible to decay and often, through ignorance regarding its classification, is beyond repair before the child is taken to a dentist.

Bear in mind this: The first molar erupts at the age of six years. It is a permanent tooth. It frequently decays quite early in life. It is the keystone of the arch. It is the most important tooth of all.

If there is not another thing you remember from my lecture, I want you to remember this.

Plate 12.—Shows again the position of the teeth at the seventh year of age.

This shows the same at the eleventh year of age, and the conditions at that time. Note the twelve-year molar is just showing itself, the temporary molars are being replaced by the bicuspids, and also note the beginning of formation of the third molar, or wisdom tooth.

Plate 14.—At the age of thirteen we find the condition



as shown here. All the permanent teeth are in position excepting the wisdom tooth, which erupts after the seven-teenth year—about the age when boys and girls think they know all there is to know, and a little more.

Plate 15.—This shows the full allotment of permanent teeth and roots.

Plate 16.—This shows you how you will look some day unless you take the very best of care of your teeth.

We now come to the second part of our address, namely, the structure of the teeth, destruction by caries, and restoration.

Plate 17.—This plate shows you the front view of the two jaws, and the condition of the same during eruption.

Plate 18.—This slide shows you the front view of the jaws, with the outer plate removed, the front side of the roots of the teeth ground away, showing the pulp canals, the canal which holds the blood vessels, nerves and capillaries from which the tooth receives nourishment, and through which you receive pain if you neglect your teeth.

Plate 19.—Here you will note the veins and arteries which lead through the bone, carrying the blood to and from the teeth.

Plate 20.—Here are the nerves which supply the teeth. Note how they pass along through the thick part of the jaw bone, as the veins and arteries, for protection. In all parts of the human body the sensitive and most vital organs are placed where they are least apt to receive injury.

We often see a wonderful piece of machinery as we may be passing through some factory, and marvel at its greatness and the mind of the man who invented it, but there is no piece of machinery so wonderful as this body of ours, no mind that equals the mind of our Maker, and yet frequently we take less care of this wonderful machine than men care for a machine of iron, steel and wood.

Plate 21.—This picture will show you still plainer the distribution and connection of the tooth nerve supply, and will help you to realize why one sometimes has headache, eyeache, earache, and sometimes “aches all over” when there is only a cavity and an exposed nerve in one tooth.

Plate 22.—This is a view of a tooth sliced lengthwise, showing the pulp canal, nerves and blood vessels entering the tooth through the apex of the root.

Plate 23.—This is a colored photograph of a perfect

tooth, the bony process which supports it, and the gums and lips.

Plate 24.—The same as the last picture, only showing beginning of caries or decay. Note that the decay always starts from the outside, usually between the teeth, where food is lodged and left to decompose. So to avoid decay as much as possible, you must keep the spaces between your teeth clean.

Plate 25.—This is the same as the other two pictures, only showing caries or decay in a more advanced stage, being advanced so far as to expose the nerve. This has caused it to “die” and produce an abscess. In this case the pus was discharged through the tooth by opening the latter with a drill.

Plate 26.—Another of the same kind, with the pus from abscess escaping through fistula on the gum.

Plate 27.—Shows the same tooth, after successful treatment of abscess, and finally restored to usefulness by filling.

We are now to take up the third part of our subject, namely, occlusion and malocclusion of the teeth, or, as you more commonly hear it spoken of as straight or crooked teeth.

Plate 28.—This picture shows you a set of teeth in correct occlusion or articulation, or, as you would say, straight and beautiful. You may occasionally see a friend with teeth like this, but they are not very common.

You will note how they are placed. Every tooth meets or occludes with two teeth except the upper wisdom teeth and lower central incisors. It is just that position every set of teeth should have, not only because they look better (which is the least important), but because they assist in proper mastication of food.

Plate 29. Shows the front view of a face of an American Indian. Notice how uniform every part is, showing that he has his full allotment of teeth and all in perfect occlusion.

Plate 30. This is a profile or side view of another Indian, which proves to you the same.

Plate 31.—Just note the difference in the face when the teeth are not in perfect occlusion or in malocclusion, as in this picture of King Alphonse of Spain and the next.

Plate 32.—Of Queen Victoria of Spain, which quickly shows you there is malocclusion again. Even though one is a king and another a queen, you easily can see the beauty

in the Indian face where the teeth occlude properly.

Plate 33.—This is a picture of a girl before teeth were regulated. The deformity here was caused by the extraction of the six-year molars (the keystone) I told you about a few moments ago. Do you see now why I told you to at least remember that tooth?

Plate 34.—This shows you the casts of the teeth of the girl shown in the picture just now on the screen. Note what the extraction of that six-year molar has done. Not only marred the beauty of the girl, but also she has lost the use of the tooth taken out. The tooth back of it has tipped so it's of no use, and if left a few years longer the tooth in front of it will tip until it will be of no use, and that condition will be found on both sides of the mouth. Where will she have any teeth to properly masticate food with if this condition is left to run its course? She will soon be chewing like a rabbit, yet with the front teeth out of place as shown she cannot use even those satisfactorily for biting, which is their only duty. The result: food swallowed partly chewed, a little later indigestion, and still later more indigestion. Isn't that proof enough that we should care for the six-year molar?

Plate 35.—This plate shows the same young lady after the malocclusion is corrected.

Plate 36.—Shows a cast of the teeth after correction. The teeth are practically in occlusion and all where some use can be made of them. The missing teeth are replaced by artificial substitutes—better than nothing, but far from being perfect.

Plate 37.—Shows a girl whose teeth protrude because she sucked her thumb, and her appearance after they were corrected.

Moral—Don't suck your thumb.

The boys must not think, just because the pictures are all of girls, that they can suck their thumbs. It works just the same for boys, only we boys have more pictures of girls, you know.

Plate 38.—Shows another girl. This appearance is caused by mouth-breathing.

Plate 39.—This is a cast of a comparatively perfect set of teeth so far as form and articulation are concerned, but note the condition of five or six teeth, caused by the ravages of decay. Much of this can be avoided by proper care, but can be remedied, even when in this condition.

Before turning on the light I will show what is being done for the less fortunate school children in many of our larger cities, where the city provides for the care of the teeth of the children, as it is proven that much of the backward work in school is caused by decayed and aching teeth.

Plate 40.—This is a picture of a free dental clinic where the teeth of the less fortunate are cared for.

Plate 41.—Shows a tooth brush drill in a school room, which is carried on in many public schools of large cities.

In closing, simply this: The care of your teeth and mouth is one of the most important duties you have to perform, as all you eat goes into your mouth for mastication. If your teeth are in a badly decayed condition you cannot chew your food as you should. If your mouth and teeth are dirty during the process of chewing, the filth mixes with your food and is swallowed, and many cases of sickness are traced back to the condition of the patient's mouth and teeth.

Just remember these few rules:

1. Clean your teeth after each meal and before retiring with a good powder recommended by your dentist. Don't bear on as hard as you can, but just sweep them down on the upper teeth and up on the lower ones, that the bristles may get between the teeth, where the food lodges.

Brush them not only outside, but inside as well.

2. Use luke-warm water; not ice-cold or too hot. If possible, a little antiseptic mouth wash in it, and if this be not available get a little soda from mother's pantry.

3. Use floss silk between the teeth; not just pushing it in and up against the gum, but handling it carefully, as gums need care and protection and are just as important as the tooth.

4. If tartar deposits on your teeth have it removed.

5. And, lastly, visit your dentist regularly at least twice a year. Take his advice regarding your mouth and teeth and you will be spared much pain and will enjoy life better.



## ***A Study of Saliva and Its Action on Tooth Enamel in Reference to its Hardening and Softening.***

By JOSEPH HEAD, M.D., D.D.S., PHILADELPHIA, PA.

*(Continued from August Issue)*

If, therefore, the specimen is so adjusted and set under pressure that there will be no give between it and the anvil, it is possible to determine accurately within, say, one-tenth of a micron, just how far the punch would penetrate under a given pressure. For instance, the specimen is carefully ground with a Reichert section grinder so that there is a flat, large base. A small spot on the top of the enamel is ground parallel to the base. This forms the area to be tested. Any pressure exerted on the enamel spot by the punch is directly expended on the enamel, without any side give between the base of the specimen and the anvil. The specimen with parallel sides is placed on an agate slab and the slab placed on the anvil. The punch is adjusted near the edge of the ground enamel and given a pressure of 5 pounds. A reading by the microscope attached to the anvil is then taken on the scale attached to the punch. The pressure is then raised to the desired amount, say 75 pounds, for a given time, and then the pressure is reduced again to 5 pounds and another reading taken, the difference on the scale representing the penetration of the punch. To shift the specimen under the point for the different measurements, the agate slab is moved, not the specimen on the slab. This eliminates variations in the spring of the specimen, since the compression of the parallel slab on the anvil under a given pressure will always be the same.

Five or more measurements are usually made for each reading and the average taken. By this means the density and strength of normal enamel can be shown, as can also the variations from the normal enamel caused by strong acids, water solutions of acids, saliva, fresh and stale acid saliva solutions, and the recovery of enamel from the effects of a slight acid decalcification and the rehardening of its surfaces after it has been ground with a stone.

All analytical analyses of saliva heretofore have been hampered by the fact that the investigator of it first started by chemically breaking it up, thus largely destroying it as saliva. All analytical investigation of saliva from a dental point of view, up to the present time, has been of little value owing to the fact that normal saliva may be alkaline to lac-

moid or congo red, neutral to litmus, and acid to turmeric paper, all at the same time. How saliva reacts to lacmoid, litmus or turmeric may be purely of academic interest, but how it may react on enamel and dentin is a vital question that interests every man that lives, and this machine has, it is hoped, made it possible for enamel to be its own indicator of how a saliva may affect it. Since the first days of physiologic study, saliva has been a most tempting field for investigation because it is the body secretion most easily obtained in a living state. It ought to be at least of equal value to the diagnostician as urin, but up to the present time it has not been. This may lie in the fact that saliva is a living substance, and urine is an effete product that lends itself to a chemical analysis that would absolutely destroy saliva as saliva. Chemical analysis that breaks up the individuality of living saliva is of little more value in showing the vital action of saliva than fried chicken would be in showing the beauties of a cock fight.

I am far from discouraging saliva analysis of any kind. Epinephrin may illustrate the living secretion of the suprarenal capsule or it may not. Salivary extracts or chemical products are interesting but inconclusively related to the living action of the secretion and, therefore, while enzymes of a curious and even therapeutic nature may be extracted from saliva, no one can prove that they justly represent the action of the living secretion unless some means are devised to make control tests with the living saliva that show the corresponding action. This machine, it is hoped, will make it possible to test on tooth enamel the acid restraining power of various living salivas in relation to a standard water solution of acid. Salivas vary in this power. The same saliva may vary at different times, apparently according to the condition of the patient.

The conditions then are as follows: During sickness the teeth, from clinical experience, are known to decay. This may be due partly to acid medicine or lack of care, but with every allowance for these sources of error, it seems to be well established that severe or chronic illness in some way may render the teeth sensitive to deterioration. Formerly it was supposed that some product was extracted from the enamel through the blood circulation, but this is now fully disproved by the histologic knowledge that human tooth enamel is, to all intents and purposes, absolutely shut off from the blood current. If a relation between approaching sickness and a loss of acid protecting power in the saliva could be established, a beginning in the diagnostic testing of

the living saliva would have been fairly inaugurated. Take for example, the test that was made on a specimen of tooth enamel that I use for an illustration. One side was ground to a flat, broad base, on the other side the enamel was ground in a small corresponding parallel plane. This was placed on the anvil of the machine and raised up against an iridium point 1/50 of an inch in diameter until a pressure of 5 pounds was reached. A reading was then taken on the micrometer scale and noted. The anvil was raised up and down repeatedly until all give between the specimen and anvil disappeared, and the 5 pounds' pressure always gave the same reading. Then fresh lemon juice and water 1 to 100 was placed on the specimen around the point and the point relaxed so that the fluid could readily get underneath. At certain intervals of time the pressure of 5 pounds was tried and a reading taken which showed a loss of tooth structure as follows:

2 minutes	0.8 micron
5        "	1.2       "
10       "	1.4       "
35       "	2.3       "
60       "	2.8       "

Thus, in one hour there was a loss of 2.8 microns of tooth enamel. This same test was then made on the same tooth enamel with a fresh saliva solution of lemon juice, 1 to 100. This solution turned litmus red and was distinctly sour, and yet after an hour's application the enamel showed a loss of only 0.3 of a micron. We might, therefore, express the restraining factor of that saliva as 28 :3 or 9. Numerous other tests have been made of a similar nature and all seem to give consistent figures. They almost invariably seem to prove the power of saliva to restrain the action of lemon juice on enamel. They also show that some enamels are much more resistant to decalcifying action than others.

As an illustration, another test might prove interesting: This specimen was ground longitudinally for a base along its axis and a small parallel plane ground on the enamel of the opposite side. A solution of 1 to 100 lemon juice and water applied for an hour dissolved 1.0 micron. Saliva and lemon juice, 1 to 100, applied for sixteen hours, showed no loss of tooth tissue at all. It was then tested with the steel punch 1/50 of an inch for density and was found so softened that from 60 pounds to 70 pounds' pressure could not be obtained. The softened enamel simply refused to support the punch under such a pressure. The specimen was then placed in fresh saliva and set in the culture oven at

blood heat for seven hours, the saliva being changed every half hour. At the end of that time the tooth was again tested with the steel punch and was found to have so hardened that 75 pounds' pressure was readily withstood and a various penetration noted of 3.5, 2.8, 3.2, 4.5 microns. No doubt it would have hardened up more, but the various testings had so strained the specimen that it was considered advisable to continue with others. The great softening and hardening apparent in this last test is no doubt due to the enamel being very thin so that the variations were partly due to the dentin underneath. But tests on two bicuspsids extracted from the same mouth for the purpose of regulation, with perfect enamel, to all appearances show conclusively that enamel has an extraordinary power of hardening and softening under various conditions, although no acid solvent at all was used.

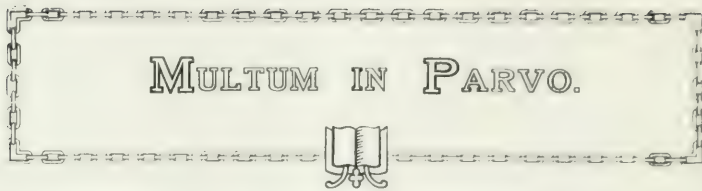
This softening and hardening of enamel has a very practical bearing in relation to mouth cleansing and the use of brush and dentifrices. Enamel that in its hardest state would only show insignificant wear to dentifrice grit and friction in a temporarily softened state may, through a good brushing with grit, lose a very material amount of tooth structure. This softening and hardening may readily account for the reason why some patients, especially those fond of fruit, wear their teeth down to the gum at a comparatively early age. The mere friction of mastication is sufficient to take off a layer of enamel softened by fruit or vinegar, which if left to itself might reharden.

I have made hundreds of tests with this machine, but as these are largely of interest to dentists, I will reserve them for another paper, where there will be ample space for the tables that should, of necessity, accompany my findings concerning the variations in the action of enamel, which variations are so extraordinary as to be almost beyond belief.

But that enamel will harden and soften within certain limits, I am convinced. And that this hardening and softening is influenced by the saliva and foodstuffs is to me beyond the question of a reasonable doubt. This action I also believe may occur in dentin, but my tests concerning this latter are not sufficiently numerous to serve as a basis for a positive assertion. — *The Dental Summary*.

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This Department is Edited by C. A. KENNEDY, D.D.S., 2 College St., Toronto  
*Librarian, Royal College of Dental Surgeons of Ontario*

*Helpful Practical Suggestions for publication, sent in by members  
of the Profession, will be greatly appreciated by this Department.*

SOLDER SPUR TO INLAY.—To prevent inlay abutments from changing position in construction of bridges, solder small spur to inlay, so that impression can catch inlay securely, always remembering to take bite before the soldering of this spur, as spur would interfere with the taking of bite.—*A. W. Guillory, D.D.S., Kinder, Ia.*

CARE OF IMPRESSION TRAYS.—Every dental laboratory should have a liberal and well-selected assortment of impression trays. When new they should be given a coat of thin solution wax and gasoline. After being used they should be boiled, wiped dry and coated again. This prevents discoloration, and the ease with which tray and impression can be separated by simply holding over heat for a moment will amply repay for the effort to keep the tray like new and always ready.—*I. B. Carolus.*

ETIOLOGY OF ADENOIDS.—This condition is found in children from the ages of two to ten years. The exact cause is not definitely known, but it is very apparent that adenoids are frequently associated with diseased tonsils and changes in the nose, such as infected turbinates, spurs of the septum and nasal polypi, and it is only fair to presume that due to the continued irritation of infective material coming in contact with the lymphoid tissue, causes it to become hyperlastic. Acute infectious diseases, such as scarlet fever, measles and whooping cough, due to their almost specific action at times on the mucous membrane of the nose and throat, are predisposing elements in the causation of this disease.—*T. W. Brophy, M.D., D.D.S., Chicago.*

PROTECTING PATIENT'S CHEEK IN APPLYING RUBBER DAM.—Most patients appreciate having their faces protected while the rubber dam is in position by placing small pieces of cottonoid between the holder and the cheek.—*G. Munroe, Dental Review.*

**AVOIDING THE SPLITTING OF A ROOT IN REMOVING A POST.**—In removing a post from a root with a post-puller, a piece of German silver is cut to fit over the end of the root and punctured, and the post is allowed to pass through and then removed. This eliminates the possibility of splitting the root in case the end should be uneven.—*E. T. Tinker, Dental Review.*

**REMOVING PLASTER FROM A DENTURE.**—The last particles of plaster which may adhere to the unpolished surface of a vulcanite plate can be entirely removed without any difficulty by placing the plate, when polished, into a solution of lysol. The stronger the solution the less time required for removal of the last trace.—*Edwards' Dental Quarterly.*

**MORTALITY STATISTICS**—Some interesting mortality statistics for New York are contained in a careful compilation just issued by the Municipal Health Department. While a child's chances of life are far better than they were a generation ago, longevity is less common. In 1882 the "expectation of life" for a child of five years was 41.3 years; now it is 51.9 years. In 1882 a person 35 years old had an average chance of living another 26.7 years; in 1913 he ought to have 26.9 years before him. That, however, is the last age of which the chances of life have improved. At 40 an average of only 23.4 years of life now remain, as compared with 23.9 years in 1882; and after 40 the disparity grows steadily, until a person of 80 has now a statistical right to but 4.3 years of life, as compared with 6.4 years a generation earlier.—*The Dental Record.*

**CEMENTATION OF INLAYS.**—Great care should be exercised in the cementation of inlays. Many inlays are failures because of the fact that the operator used a cement totally unfit for this purpose. The cement should have very fine granules, for there are some cements on the market the granules of which measure about 0.05 of an inch. If, however, a cement of proper consistence is used, and a portion of the cement is smeared in the cavity as well as on the inlay, and the inlay pressed in and held firmly, the margins being thoroughly burnished with a smooth burnisher during the hardening process, we can expect to produce an inlay that is ideal.—*T. P. Hinman, Journal of Allied Societies.*

## PERSONAL PAGE



**D**R. MOORE, formerly of Lacombe, Alta., has opened an office at Athabasca Landing.

Dr. J. E. Wright, Pincher Creek, Alta., has moved to Taber, Alta.

Dr. T. A. Maxwell and Mrs. Maxwell, of Calgary, are on an extended visit to Vancouver and West Coast.

Dr. E. H. Crawford, Enderby, B.C., was in Calgary for a week during the W. C. D. S. Convention.

To Dr. and Mrs. J. F. Shute, Lacombe, a daughter, born April 2, 1913.

Dr. J. J. Mills, Southampton, Ont., will locate in Calgary on September 1, 1913. Dr. Mills is at present visiting in Vancouver.

Dr. Sanderecock has returned to Calgary after a trip to Woodstock, where he underwent a serious operation for appendicitis.

The following are the names of the successful candidates in the half-yearly examinations recently held by the Council of the College of Dental Surgeons of British Columbia: R. R. Alward, F. W. Anderson, R. L. Coldwell, C. S. Dent, W. M. Hanna, H. H. Hare, R. Jamison, O. N. Leslie, P. E. Margeson, T. R. Peden, F. H. Quinn, O. F. Randall, E. S. Tait, and E. H. Thomas. Fourteen out of twenty-three who tried the British Columbia examination were successful.

Dr. H. A. Clark, of Brockville, was married early in July.

Dr. S. H. Simpson, Kingston, Ont., had his office destroyed by fire July 17th. About \$1,500 damage.

The Vancouver Dental Society held its third annual picnic on Saturday and Sunday, July 26th and 27th, to Seaside Park. About twenty-four members were present. A very pleasant and enjoyable time was spent in fishing, ball games, lawn tennis, boating, etc. The annual picnic is one of THE events of the year.

Among those to move into the fine new Birks Building, Vancouver, are: Dr. W. J. Lea, Dr. W. F. Wright, Dr. Geo. Telford, Dr. T. Snipes, Dr. R. C. Banford, Dr. R. Rostein, Dr. R. Allward, Dr. W. H. Thompson.

Dr. O. F. Randall has opened an office in Collingwood East, a suburb of Vancouver.

Dr. J. E. Black, formerly of Toronto, now practising in Vancouver, and President of the Vancouver Dental Society, had the misfortune to fall while playing tennis at the Society picnic at Seaside Park and dislocate his shoulder. Dr. Black was rushed by boat to Vancouver Hospital, and is doing nicely.

Dr. Cameron, of Swift Current, was in Calgary the last week of July visiting his former partner, Dr. Harkshaw. Dr. Cameron will also spend a couple of weeks at Banff and Laggan before returning home.

Dr. Charles Dent, who recently passed the B. C. Board, is a '13 graduate of Portland Dental College, and intends practising in Revelstoke.

Dr. F. French, of Edmonton, spent the month of July at his former home, Renfrew, Ont.

Dr. C. E. Wright, of Madoc, and Dr. Frank Hughes, of Galt, Ont., have each opened an office at Edmonton.

Dr. R. W. Conn, of Edmonton, was quietly married to Miss Emma Redden on the 2nd of July, 1913.



## *Obituary.*

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### *The Late Dr. Hibbert Woodbury.*

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**H**IBBERT WOODBURY, D.D.S., of Halifax, Nova Scotia, was born at Wilmot, Annapolis County, October 26, 1842, and died on July 2, 1913, at the age of seventy years.

His ancestors were of English extraction and Puritan stock, who came to Massachusetts in 1628. In 1760 Dr. J. Woodbury moved to Nova Scotia, thus the ancestry of the subject of this sketch were pioneers in the early days of New England and Eastern Canada. He was the son of Francis and Elizabeth Cowdon Woodbury.

Dr. Woodbury received his early education in the schools of his native province, and graduated from the Philadelphia Dental College in 1878. He was the valedictorian of his class. For a time he practised his profession in Babylon, New York, but in 1880 moved to Halifax, where he established a practice, being joined by his brother, Dr. Frank Woodbury, in 1884 under the firm name of Drs. Woodbury Brothers, which arrangement continued until 1909, when he formed a partnership with his sons, Drs. W. W. and R. H. Woodbury, under the style of Dr. H. Woodbury & Sons.

Dr. Woodbury for many years has been a prominent figure in the dental profession of Eastern Canada. He was one of the chief promoters and first members of the Nova Scotia Dental Association, which was incorporated in 1891. He has been continuously a member of the Provincial Dental Board, and for fifteen years until his death its honored President. He was one of the founders of the Maritime Dental College and Faculty of Dentistry of Dalhousie University in 1908, and a most ardent and optimistic believer in the future of dental education in Eastern Canada. He occupied the chair of Dental Prosthesis until last session, when he accepted the less arduous duties of lecturer in that department because other duties called him.

Dr. Woodbury, besides conducting a very successful practice, found time to identify himself with many enterprises of the Methodist Church, of which he was a member from eighteen years of age, and in which he has been a licensed local preacher for forty years. He has held nearly

every office open to a layman in that communion. At his death he had just begun his seventh year of service as President of the Y. M. C. A. of Halifax, and had much to do with the campaign which resulted in the erection of one of the most beautiful Y. M. C. A. buildings in Canada. He was a member of the Maritime and National Committee of that institution. He was for many years a director of the School for the Blind, also the School for the Deaf and Dumb, and no one was better known and loved by these unfortunate children throughout the Province of Nova Scotia than he. His abiding interest in the spiritual and moral welfare of the young and unfortunate could be testified to by hundreds.

Dr. Woodbury married in 1881 Miss Sadie Weather-  
spoon, of Granville Ferry, N.S., who is still living. His two sons, Dr. William W. and Dr. Ralph H. Woodbury, graduated from the Philadelphia Dental College in 1909, and will continue the practice. The former is Professor of Orthodontia and the latter is Lecturer in Prosthetic Dentistry in the Dalhousie Dental School.

The interment was at Middleton, in the far-famed Annapolis Valley, in the cemetery where lie the Woodburys of four generations.

Of the many who have paid loving tributes to his memory and his exceptionally worthy character, someone said, in effect, that Dr. Woodbury practised his profession in order that he might live, and lived in order that he might labor for the good of others.

The great and crowning merit of that tribute is that it says just what the whole community feel, that it evokes a warm response in the heart of everybody who was associated in and knew of Dr. Woodbury's many, various, and most assiduous services for the public good.

When that tribute has been paid, about the highest possible thing has been said for the moral and religious character of the man.

The difference between the worst and the best in human nature is the difference between pronounced selfishness and ideal unselfishness—the life of hearty, sympathetic, loving, helpful service for others.

The entire dental profession will learn with regret of Dr. Hibbert Woodbury's demise and unites in deepest feelings of sympathy for Dean Frank Woodbury and other members of the family so suddenly bereaved.

## *Bacteria and Digestion.*

**D**R. F. ARNOLD CLARKKSON, Professor of Physiology, Royal College of Dental Surgeons, Toronto, was asked by ORAL HEALTH what would be the effect on the digestive process if the oral cavity and alimentary tract were maintained absolutely free of bacteria. Dr. Clarkson replied that ever since bacteriologists have recognized that some of the food products are broken up in the intestine by bacteria, the question has been raised whether or not this kind of digestion was beneficent. As long ago as 1895, Nuttall and Thierfelder fed to guinea pigs, kept sterile from birth, food in which all bacterial life had been destroyed. The animals lived and grew, much as ordinary guinea pigs. This was in line with an important observation by Levin, in Sweden, that arctic animals often had sterile intestinal contents. Another experimenter (Schottelius) however found that sterile chickens lost heavily in weight when kept on sterile food, but picked up again when given ordinary rations.

These two sets of experiments show how the physiological world is divided. On the one hand we have those who hold that bacteria are absolutely necessary for healthy human life; on the other we have Metchnikoff and his school, who say that bacterial putrefaction is the occasion for constant danger to the organism. One English surgeon would go so far as to cut out the colon by a surgical operation, and an American surgeon sees in the colon bacillus nature's method of regulating the population. Metchnikoff recommends sour milk to prolong life, because the ordinary intestinal flora do not flourish in the presence of lactic acid.

The truth, as usual, probably lies between the two extremes. While the presence of bacteria confers no positive benefit upon the animal economy, the organism has adapted itself, under usual conditions, to minimize their pernicious influence.

The Council of Dental Surgeons of New Brunswick have appointed Dr. Fenwick C. Bonnell, of St. John and Dr. H. S. Thompson, of Moncton, as the Board of Dental Examiners of New Brunswick, for college graduates wishing to practise in the province.

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Vol. 3 TORONTO, SEPTEMBER, 1913. NO. 9

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## EDITORIAL.

### *Asepsis in Dental Practice.*

IT may not be practical to complete every dental operation observing absolute surgical cleanliness. It is, however, not only practical but essential that all instruments be sterilized and made surgically clean after use, that infection may not be carried from patient to patient. This at least is one place where there should be no doubt about complete sterilization.

Many men, however, like the publican of old, go through the form but miss entirely the spirit of the thing. They fail at some one point in such a way as to render the whole operation septic. The story is told of a surgeon who had the quite harmless habit of running his fingers through his hair. This he would occasionally do in the operating room during a moment of thoughtlessness, and thus render almost useless the great time and trouble previously spent upon the sterilization of his hands. Of a similar character was the thoughtlessness of a dental surgeon who, it is said,



in operating at a patient's home, carefully sterilized his instruments and then used the carpeted floor for an instrument table.

Many operators in everyday practice are guilty of just such inconsistency. They use "aseptic" waste cotton cartons and, instead of taking a fresh carton for each patient, wipe the carefully sterilized instruments, patient after patient, upon the edge of the same receiver. One's mind is no doubt quieted by the printed label on the carton, which assures one that it is "aseptic," but this does not save one's patients from the danger of infection, which is certainly present under such conditions.

The old-fashioned operators in their much-despised method of using the floor as a waste receiver were much more aseptic, though less tidy, in their habits than present-day operators who do not provide for a waste receiver that is aseptic in fact as well as in name.

Let no man deceive himself. White enamel office equipment does not necessarily mean asepsis. Acquire first the "aseptic sense" and all these other things shall be added unto you.

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### ***Nova Scotia Dental Board.***

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**T**HE following officers of the Nova Scotia Dental Board were elected at the annual meeting of the Board July 8th, 1913.

President—Dr. F. N. Ryan, Halifax.

Secretary-Registrar—Dr. Geo. K. Thomson, Halifax.

Treasurer—Dr. A. N. Cogswell, Halifax.

Executive Committee—Halifax members of the Board.

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### ***We Must Make Good.***

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*President Woodrow Wilson:* The world requires that we make good, no matter what happens, and the man who does things amounts to a great deal more than the man who wishes he had done things and who promises he will do things. The men I am sorry for are the men who stop and think that they have accomplished something before they stop at the grave itself. You have got to have your second wind in this world and keep it up until the last minute.

THE GREATEST TRUTHS  
ARE THE SIMPLEST: AND SO ARE  
THE GREATEST MEN.

J. C. & A. W. HARE

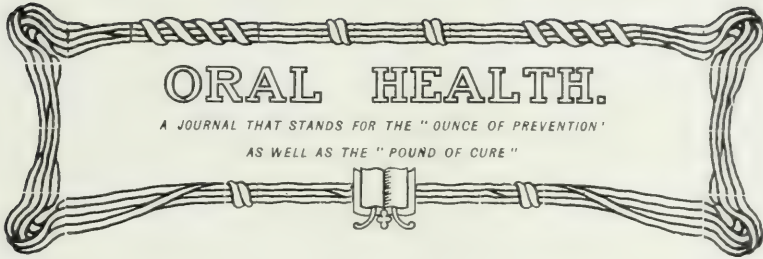


ALFRED GYSI, D.D.S., Zurich

Professor of Dental Prosthesis, Dental Department, University of Zurich,  
Switzerland:

whose investigations of the movements of the human mandible and the relation of these movements to proper form and arrangements of artificial teeth, extending over a period of twenty-five years, has ranked him as the greatest living authority on the subject of dental articulation. His extraordinary, mechanical, mathematical, and manipulative ability, in conjunction with all of the mental qualifications necessary for a successful investigation eminently fit him to maintain that position.

W. E. C.



VOL. 3.

TORONTO, OCTOBER, 1913

No. 10

## *The First Session of the Gysi Classes in Dental Prosthetics.*

BY W. E. CUMMER, L.D.S., D.D.S.

Professor Prosthetic Dentistry, Royal College of Dental  
Surgeons Toronto.



Dr. W. E. Cummer

A COURSE of exceptional value to those interested in the Prosthetic side of dentistry, has just been completed in the City of New York. The course was conducted under the direction of Dr. Alfred Gysi, Professor of Prosthetic Dentistry at the University of Zurich, and the greatest living authority on the subject of Anatomical Articulation; and with the assistance of Dr. Essig, of Philadelphia; Mr. Supplee and Dr. Ulsaver, of New York, and Dr. Wood Clapp, editor of the *Dental Digest*, by whose activity and enterprise this exceptional opportunity was made possible.

The course was held in the new building of the College of Dental and Oral Surgery of New York. This splendid building is located on East 35th St., in the east side of the city, where plenty of clinical material is available. Every courtesy was shown by Dean

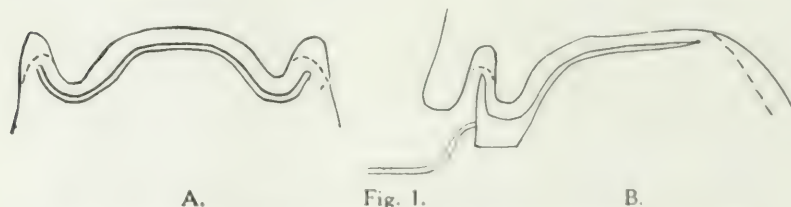


Carr, Professor Wheeler and other members of the staff, to the members of the first class, which included the following: Dr. Geo. H. Wilson, of Cleveland, author of "Dental Prosthetics"; Dr. Anton Zurbrigg, Philadelphia, Instructor in the Jarman Post-graduate School of that city; Dr. Dayton Campbell, who limits his practice to Dental Prosthetics in Kansas City, Mo.; Dr. William H. Thompson, of Vancouver; Dr. Percy Moore, of Hamilton, Ont.; Dr. Schwartz, of New York City; Dr. W. E. Cummer, of the Royal College Dental Surgeons, Toronto, Ont.; Drs. Fifield and Palmer, and Messrs. Carmen, Osbourne, Bridges, Carmichael, LeRoy Franz and Harold Franz, all of the staff of the Dentist's Supply Co. Dr. W. T. Willard, of West Toronto, is in attendance with the second class at time of writing.

Regarding the arrangement of the studies, the order observed in the handling of a dental restoration was followed, namely, impressions, trial plates, measurements, articulating teeth, staining and altering teeth and completing, was observed.

#### IMPRESSIONS.

A technique of impression taking for edentulous cases of the greatest practical value was presented by Mr. L. S. Supplee, of New York, and in the main was based upon the well-known Green method of impression in compound, modified by some very clever and effective procedures, original with Mr. Supplee. Roughly speaking, in the Green method of impression taking, impression compound is used exclusively with shallow trays, fitted with remov-



Shows the relation of the properly trimmed tray to the ridge. In A. the dotted lines represent the contraction muscles with about  $\frac{1}{8}$  in. space between them in their contracted position, and the tray, also leaving about  $\frac{1}{8}$  in. between the tray and the tissues for bulk of material. In B. the handle is shown bent down past lip action, and the tray trimmed to escape muscle action under the lip, and also trimmed about  $\frac{1}{8}$  in. ahead of the soft palate movement. This may be easily seen in the mouth by asking the patient to say "A L". The soft palate position is marked by the dotted line in Fig. B.

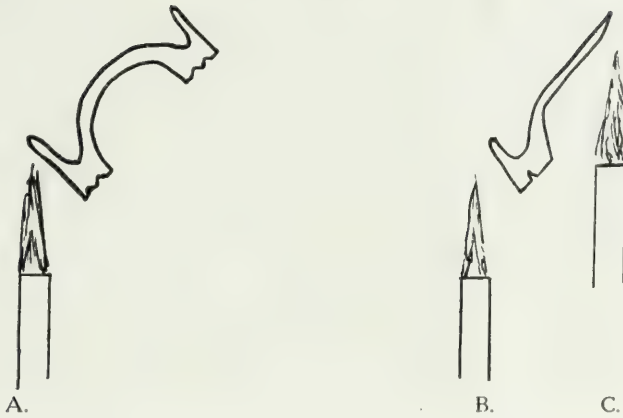


Fig. 2

- A. Showing position of small bunsen flame in heating rim already pared down to about 1-16 in. thick for muscle trimming.
- B. Showing heating of labial surface of impression.
- C. Showing " distal " " "

(Always dip in warm water after this and similar operations to prevent compound sticking to lip in reinsertion).

able handles, and carefully trimmed to avoid muscle contraction. (Fig. 1.) Impression compound (low heat) is introduced, and an impression taken, giving a true impression of the vault, but with side-muscles distended from their ordinary positions by excess compound; this is removed, and the sides pared down thin. The sides are then reheated (Fig. 2) and placed back in the mouth, and the



Fig. 3

(From Catalogue, Detroit Dental Mfg. Co.) Showing muscle trimmed impression by the Green method. The entire periphery has been formed by muscle action of the lips, cheeks, and soft palate. Note removable handle.

patient, by muscular movements, and with handle removed from tray, "muscle trims" the rim of the impression (Fig. 3), and also, by movement of tongue, presses compound up against soft tissues at back in the upper and on lingual flange of impression of lower. This very briefly and roughly describes the Green technique, the details of

which are fully set forth in Dr. Green's 200-page book.

A denture, correctly made upon a correct cast obtained from an impression made by this method, requires no subsequent filing or trimming, and exerts sufficient pressure upon the periphery of the denture to seal the periphery against air leaking in, which produces surprising results in the way of adhesion and non-interference with muscular action.

Mr. Supplee modifies this technique in many respects, chief of which is that the muscle-trimming is done with the mouth closed and under normal biting stress, by building down the impression to trial plates form to meet the opposing natural teeth or opposing trial plate, as the case may be, having previously heated the rims of the impression. (Fig. 4.) This makes the operation not only less difficult, doing away with the tendency of the untrimmed impression to become unseated while muscle-trimming, but also gives a more correct trim. This can be simply demonstrated by taking two impressions of the same mouth, and having the patient contract the muscles against the softened sides of the impression with the mouth open, then, on the second impression, with the mouth closed. The muscles will act on entirely different parts of the impression with the mouth closed than with it open, and give a much superior impression and cast for a denture under functions when trimmed in this way, which is quite obvious.



Fig. 4

(From Catalogue Detroit Dental Mfg. Co.) Appearance of upper and lower impressions with biting blocks as described, with notches to retain relationship, and entire periphery trimmed by muscular action following Green-Supplee method. Full uppers with natural lowers similar, only lower impression replaced by natural teeth, as in Fig. 6.

SYNOPSIS: STEPS IN UPPER IMPRESSION (WITH NATURAL TEETH IN POSITION).

Prepare tray (Greene tray, with detachable handle preferred), shown in impression in Fig. No. 3.

1. Bend and cut tray, leaving 1/16 inch for material. (Fig. 1.)

2. Bend and cut tray, leaving 1/4 inch short of muscular action. (Fig. 1.)

3. Bend and cut tray, leaving 1/8 inch ahead of soft palate. (Fig. 1.)

4. Bend handle out of way of lip. (Fig. 1.)

UPPER IMPRESSION (WITH NATURAL LOWER TEETH IN POSITION).

Impression: Steps to get accurate impression of vault and height of rim only:

1. The tray is dried and compound prepared, rolled into a ball, heated on one side over flame until it "sizzles," and then quickly pressed against the dry cup and spread until hot melted part is next the cup, making little mound in centre of tray higher than the rest, and nothing across the back of the tray. (Fig. 5A.)

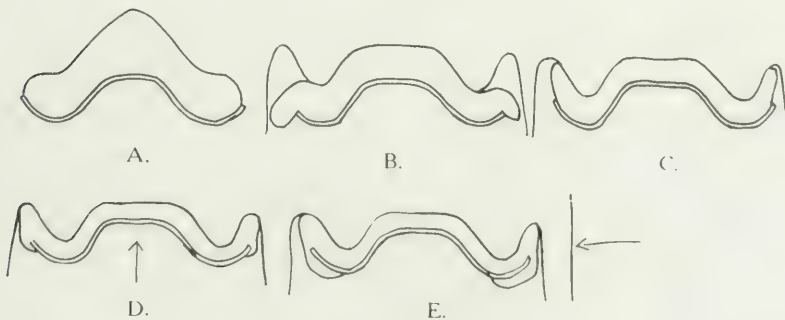


Fig. 5

Showing different steps in the Green-Supplee method of upper compound impression. A.—With compound heaped up in centre, with compound at apex hottest part, almost flowing, with balance plastic. B.—Compound inserted and pressed half way up, and flowing off cup. C.—Upward pressure relaxed, while excess compound is flipped up with first finger. D.—Upward pressure resumed, on tray accompanied by cheek and lip movement which muscle trims compound approximately, starting the excess material down under tray. E.—The foregoing, in addition to lip and cheek massage, which presses material close to the tissues, assists the muscles in trimming, and forces excess down under tray.



2. Dip entire impression in hot water just before inserting.

3. Heat central mound a little hotter than rest of impression over flame.

4. Insert quickly, and, with waving motion\*, press cup half-way home.

(Compound will tend to run over side of tray. (Fig. 5B.)

5. Raise lip and flip up, spreading compound high up under lip all round, with index finger. (Fig. 5C.)

6. Ask patient to make dislodging motions with lip and cheek, while cup is pushed rest of way home (approximately muscle-trimming margin, and starting excess compound downward). (Fig. 5D.)

7. After a few of these motions made, massage cheeks and lips, sending excess under tray; cool with ice-water and sponge, and remove. (Fig. 5E.)

8. Cut off distal part to prepare length; impression should show end of demarkation between hard and soft palate.

9. Trim rim to proper thickness (about 1/16 inch. (Fig. 2.)

10. Roll rope of compound; dry lingual side of tray; heat side of rope, and form biting block similar to trial plate. (Fig. No. 4, upper part.)

11. While warm, insert; have patient close. (Fig. 6.)

12. Remove impression. (Fig. 7.) Pare down till only cusp marks are showing. (Fig. 8.) Heat lower surface over burner; return to the mouth; have patient close again. Repeat until absolutely uniform pressure is established.

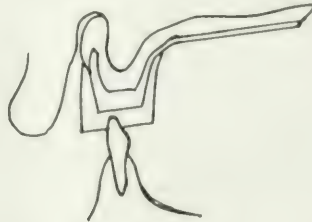


Fig. 6

Showing, in sections, upper impression, tray and bite block after first bite has been made (step No. 11 upper impression).

\*A waving or vibrating motion serves better to carry the compound in about the detail of the case than a direct motion.

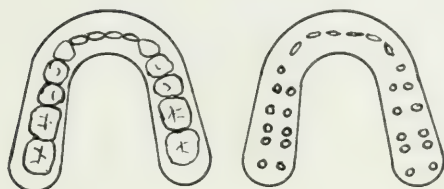


Fig. 7

Fig. 8

Fig. 7 shows under side of upper before paring down.

Fig. 8 " " " " after " "  
Cusp Marks barely showing.

### MUSCLE-TRIMMING UPPER.

(Impression now fits vault accurately, but is too high along the rim, interfering with muscular action, also too long at distal part. This next procedure allows the muscles to contract with the jaws in normal closed position, and trim to rim and distal part of impression.)

13. Heat rim of impression on labial and buccal sides. (Fig. 2 and 8B.) Dip quickly in warm water and insert, having patient close and make dislodging muscular movement (while muscle trims the rim), quickly followed by lip and cheek massage by operator, which presses the rim close to the tissues. Repeat until patient cannot throw front of impression by muscular action.

14. Heat distal part of impression (Fig. 2C); insert; pass finger across, pressing compound up into soft tissues. Have patient close and swallow quickly, which turns down the material where likely to cut, or, in other words, which interferes with muscular action. These steps having been completed, upper impression should be correct; that is, it should be impossible for patient to dislodge it by coughing, sneezing or any possible kind of muscular action. Usually, if patient dislodges front of impression, rim is too large; should be heated and further trimmed. If it drops at the back, contact there not tight enough.

### FULL UPPER AND LOWER.

For upper, in full upper and lower, steps 1-10, except biting block trimmed approximately to occlusal plane, and left flat with three notches. (Fig. 9.) Also upper part (Fig. 4), laying aside until step No. 10, lower impression.

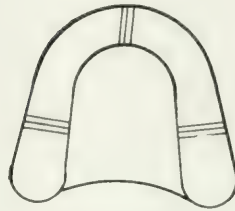


Fig. 9

Showing notches in lower part of biting block in full upper or full upper and lower impressions, made in order to maintain relationship. Also shown in Fig. 4.

#### LOWER IMPRESSION.

1. Adapt tray to ridge; trim so that patient can raise tongue to roof of mouth, and move cheeks without moving cup.
2. Roll soft compound about size of lead pencil and lay it to cool while cup is being dried and warmed.
3. Bend chilled compound to shape of tray.
4. Hold one side next to flame; when melted, stick to tray.
5. Dip back of tray into cold water.
6. Quickly pass surface of compound over flame; dip in warm water and slip in mouth.\* (Fig. 10.)

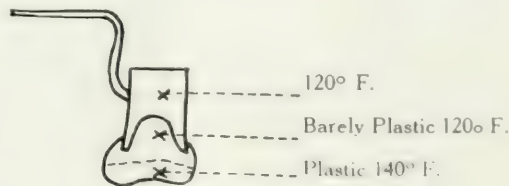


Fig. 10.

Approximate temperature of trays and upper and lower strata of compound, obtained in the first six steps in the lower impression, having for their object the firm fastening of the compound to the tray with the part of the compound coming next the tissues warm and soft, and the tray and the part of the compound next to it cooler and barely plastic.

\**Note.*—The object of the first six steps is to get the compound fastened firmly on the tray, with the part coming next to the tissues warm and soft, and the tray and the part next the tray cooler and barely plastic. (Fig. 10.)

7. Instruct patient to raise tongue, with mouth open wide. (This helps to centre the tray.)

8. Press tray half-way down while the patient attempts to move lips.

9. Press tray home with massage on cheek and lip, and tongue thrown out against lips, as in upper. Remove; trim compound thin.

10. Building up the Bite.—Rope of compound as in step No. 14, upper impression.

11. Insert with upper, cold and moistened with vaseline, in position; have patient close.

12. Remove; chill; reinsert; attempt to separate against patient's biting pressure. If the impressions separate on one side, but not on the other, the rim is too high; trim down; reheat surface and reinsert, instructing patient to close quickly, until uniform contact is established.

13. Muscle-trim upper impression as steps 13—14, upper impression, in the lingual bicuspid and molar region.

14. Place upper impression in the mouth; heat lingual flanges, already trimmed thin, of lower impression in molar and bicuspid region, from lingual side; quickly reinsert; have patient close and swallow. This muscle-trims the impression in the bicuspid and molar regions.

Muscle-trimming in the anterior lingual region:

15. Remove upper impression; heat lingual anterior part of impression, having previously trimmed thin; quickly reinsert in mouth, and have patient push tongue out of mouth, trimming lower anterior lingual part.

#### TEST.

When the lower impression is completed, the patient should be able to move the tongue, lips and cheeks in an ordinary way, without moving the impression. If movement present, reheat, and re-muscle-trim the interfering part. The impressions then resemble Fig. No. 4.

*Note.*—Dr. Supplee offered some suggestions in the use of his method, which are of the greatest value. In the first place, the bench or table upon which the work is done should be as close to the patient as possible. The bunsen which is used for heating the edges of the compound should have a small pointed flame, less than one-quarter inch in



diameter and about an inch long. In heating the material an electric heater was used, which dropped in the dish at the side, doing away with the difficulty of the material sticking in the bottom of the container, as with the heater below the container. Regarding the muscular movements of the facial muscles required of the patient in muscle-trimming, it is advisable for the operator to practise these before a glass, and to ask the patient to imitate him immediately, and then only. In the different operations the time which elapses from the removal of the compound from the warm water and flame to the insertion in the patient's mouth should be of the shortest possible duration, especially in muscle trimming, for the compound hardens rapidly, and becomes much less sensitive therefore to muscle-trimming action.

In examining the mouth, the index finger passed in the mouth, with the mouth closed, is a far better indicator than the use of the eye, with the patient's mouth open. In rapid insertion of heated compound into the mouth, if dipped into warm water first, the danger of sticking to the lip is minimized. And finally, while this technique may seem to require, from its description, a considerable length of time and exacting technique to secure full upper and lower impressions, yet, with experience, one-half to three-quarters of an hour is sufficient for full upper and lower. Some little experience in the rapid, accurate manipulation is necessary before the results are forthcoming. The results in adaptation and adhesion obtained by Mr. Supplee on patients in the clinic, and others, were the best the writer has ever seen, and all based on this principle of air-tight adaptation of the impression margin to the tissues, with relief for muscle action formed by the muscles themselves.

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Ten thousand tooth brushes and 13,000 tubes of tooth paste were sold at cost to school children of Toronto during 1912 by the Department of Medical Inspection.

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## ***Fourth International Congress on School Hygiene.***

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### NOTES ON THE CONGRESS.

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THE Congress, held in Buffalo Aug. 25-30, was under the distinguished patronage of Woodrow Wilson, President of the United States, and was presided over by Charles W. Eliot, President Emeritus of Harvard University.

\* \* \*

The attendance, the largest in the history of the Congress, was composed of teachers, investigators, physicians, dentists, sanitarians and public-spirited citizens.

\* \* \*

The general meeting on "Mouth Hygiene," held on Tuesday evening, was under the auspices of the National Mouth Hygiene Association, a recognition by the executive of the importance of this subject.

\* \* \*

The scientific and commercial exhibits were located in Broadway Auditorium. The display was worthy of the Congress. The exhibit of the Department of Medical Inspection of the Board of Education, Toronto, was the most comprehensive and complete exhibit made by any department of health supervision of school children. The illustrations of the First School, Little Mother Classes, School Dental Clinics, etc., were the objects of much interest. Dr. W. E. Struthers, Chief Medical Inspector, who arranged this extensive display, received many congratulations both on the exhibit and on the high state of efficiency of his department which the exhibit illustrated.

\* \* \*

Dr. M. Evangeline Jordan, Los Angeles, Cal., advocated the marking of children in oral hygiene, just as in reading and spelling. She also advocated the use of a van, which could move from school to school, so that the young pupils could have monthly prophylaxis. Water and waste connection could be coupled up at each school.

\* \* \*

Dr. Fones, of Bridgeport, Conn., suggested the school nurse as being the proper medium through which school children should get their training in oral hygiene.

\* \* \*

"To get the best results with the tooth brush put a little intelligence in the brush."

\* \* \*

Dr. Marcelino M. Weiss, of Havana, Cuba, submitted to the convention a small primer, excellently printed, illustrated and bound, which is in use in the primary classes in schools of Havana, Cuba. Mouth hygiene is taught in this little book as the child is beginning to make the sounds and learn its first words. The book was received with much favorable comment.

\* \* \*

Miss O'Neil, principal of Marion Street School, Cleveland, gave an illustrated lecture on the results obtained in the now famous "Marion Street School Dental Squad." A few of the class were present to show the permanent results that have been obtained.

\* \* \*

The subject of the teaching of sex hygiene was one of the most vigorously discussed at the Congress. Many varying opinions were expressed as to how far this subject may be safely taught in school. Those present, however, were a unit that there is a crying need for enlightenment on the part of parents as to the seriousness of this question. During the Congress, and under its auspices, there was presented at the Star Theatre the drama, "Damaged Goods," a play dealing with the prevalence and ravages of venereal disease. The play is not objectionable, and its wide production should go a long way toward removing the popular ignorance concerning the most prevalent, most serious, and yet the least heard of diseases.

\* \* \*

Dr. Roland O. Meiserbach, of Buffalo, conducted a demonstration on monkeys, guinea pigs and chickens, to show how infantile paralysis is carried by common flies. The animals were fed on the larvae of flies sent from a Western State where the epidemic of infantile paralysis recently broke out among limber neck chickens.

\* \* \*

In Detroit \$8,000 was set aside this year by the authorities for the maintenance of dental clinics.

Dr. Ebersole stated that the National Mouth Hygiene Association would soon have a plan perfected which would open the way for the establishing of dental clinics in any community where the plan was vigorously adopted. One of the features of the plan is to be the distribution by school children of a booklet, "Plea of the Shackled Child," and the collection of funds by them for the endowment of the work.

\* \* \*

Dr. Jessen, of Strasburg, Germany, stated that in Berlin 95 per cent. of school children had enlarged glands, and in Dartzig 90 per cent., and that Germany has two hundred school dental clinics.

\* \* \*

"The fear of future pain as a prod to urge children to the dentist is obsolete and should be discouraged."

\* \* \*

Dentists are now on the State Board of Health in New York, Ohio and Michigan.

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## ***The Locus Minoris Resistentiae in Pyorrhea Alveolaris.***

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BY EDWARD C. KIRK, D.D.S., Sc.D., PHILADELPHIA, PA.

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(Continued from September issue)

### DISCUSSION.

Dr. Egbert E. Loeffler, Ann Arbor, Mich.: It is indeed a great privilege to listen to a paper that comes from the pen of such a distinguished essayist. The logical and comprehensive manner in which the subject has been treated leaves but little room for additions, except by way of emphasis. Very much has been written upon the treatment of pyorrhea alveolaris, while the question of etiology has been left almost untouched.

I have always been a great admirer of Dr. Black and all his valuable contributions to dental literature. I am very much in sympathy with the theory advanced by the essayist, that these glands or remnants of embryonic tissue cells are weak points in the structure of the periodontal membrane, but whether they should be designated as *the* weak points requires further investigation. These glands



of Serres, so-called by some, are very generally found in all periodontal membranes, but their function or purpose is still an unsettled question. As Dr. Noyes says: "Sufficient work has not been done upon this subject to know whether this is a constant arrangement, or whether it is found only in certain animals, or even whether it may not be pathologic."

Some have made the statement that the periodontal membrane is one of the most vulnerable tissues in the human body, and it has always seemed reasonable to me to suppose that there must be some specially weak points that are more liable to break down under unfavorable conditions.

May I call your attention at this time to a very important communication by the essayist, entitled "The Dental Relationships of Arthritism," published in the *Dental Cosmos* for July, 1909, an article that every broadminded practitioner should read; also to a paragraph on page 504 of the "American Text-book of Operative Dentistry," in which the author says that, "The close relationship of arthritic malnutrition to pyorrheal involvement of the retentive tissues of the teeth is now clearly recognized, and the constitutional predisposition induced by arthritism to bacterial invasion is found to be dependent upon a diminished tissue resistance, with lowering of the opsonic index, which, in many cases, is amenable to autogenous vaccine therapy, under which treatment the opsonic index has been raised to normal, with cure of the local lesion."

I have always been a firm believer in the statement that, in the treatment of pyorrhea alveolaris the question of malnutrition or faulty metabolism must be considered as a very important etiological factor.

Dr. Kirk states at the close of his paper that in his judgment the data presented are meagre, to a certain extent unsatisfactory, and fall short of being conclusive. This is simply another illustration of the charitableness of our distinguished essayist in all his original communications.

To my mind, the most important point brought out in this paper is that in the treatment of the various diseases of the oral cavity, the question of the susceptibility of the tissues involved, or of their resistive forces under unfavorable conditions is not at present sufficiently emphasized.

In closing, I wish to join the essayist in the hope that

this paper may be a means of stimulating greater enthusiasm for further research in this most interesting subject.

Dr. R. H. Hofheinz, Rochester: The unfortunate feature of the essay is that it cannot well be discussed, nor can even the great point around which the paper focuses. The subject of pyorrhea in dentistry corresponds very vividly with those of theology and of politics in our daily life—there is no end to its discussion. It seems rather lamentable for both the suffering patient and dental science that so much discrepancy still exists regarding the etiology and cure of this unfortunate disease.

We still have with us the men who cure every pyorrhetic condition with the scaler, pumice, and the orange-wood stick. There are but few left who attempt to cure exclusively by air, water, and cathartics. The *locus minoris resistentiae* of pyorrhea remains the delicate fibrous connective tissues, known as the peridental membrane.

What has puzzled us poor daily practitioners has been the question: *Ubi est causa?* We know that salivary and sanguinal secretions form a great part of the disturbance. Are they the primary or secondary causes?

Bell tells us in his "Diseases of the Teeth," as early as 1837: "In cases of great irritability of constitution and want of tone in the system, the irritation which is caused by salivary calculus frequently leads to more serious conditions. Although the gradual loss of substance in the gum and alveolar processes occasionally takes place without any obvious local or constitutional morbid action, it is much more frequently produced by derangement of the digestive organs, or some other constitutional cause, either immediate or remote." Chapin A. Harris, in his "Dental Surgery" of 1839, says: "I am led to believe that no matter how great soever may be the constitutional tendency to the disease, it would never manifest itself were it not for some cause of local irritation." Nathaniel Chapman, in his "Dental Surgery" of 1829, says: "Similar causes, *ceteris paribus*, in general, produce similar effects, and as the organization of the human frame is the same everywhere, so, if exposed to similar causes of disease, similar diseases will follow, especially if those diseases have a specific character, and this explains the reason why inhabitants of opposite countries have similar diseases, because exposed to similar causes of disease." We see that the old writers, with few exceptions, recognize both the

local and constitutional factors in the disease known as pyorrhea alveolaris.

Dr. Kirk, at the very beginning of his paper, lays special stress upon bacterial infection as the principal cause of the disease. The question arises, Does pyorrhea not manifest itself until pathogenic bacteria have ingress into the peridental membrane and the *locus minoris resistentiæ*? Does not pyorrhea already exist when the peridental membrane is in an incipient stage of inflammation—though inflammation is only too much blood in a part with motion of that blood partially increased or diminished, as an old pathologist expresses it. The essayist alludes to the action of the phagocytes in the peridental membrane. It would be interesting to know to what extent the phagocytes do their work in cases of peridental disease, compared with their relative action in other infected tissues of the body. It seems to me that their field must be restricted by the vascular supply of the pericemental tissue, which, though rich, is not so much so as other parts of the body. The fibrous structure of the peridental membrane and its increase with age makes it less vascular, and thus shuts off more and more the vascular supply, and diminishes the freedom of action of the phagocytes.

The point of relative susceptibility has been well emphasized. It is equally well illustrated in cases of syphilis, typhoid, etc. The remarkable part is that a man in health and of good tonicity may be one of the most generous distributors, in fact a reservoir of the disease, though himself immune and utterly unconscious of the fact that he carries the typhoid bacteria. You may all remember the case of "Typhoid Mary," who distributed the germs to numerous families by whom she was employed as cook.

The end-organ theory of Dr. Talbot always had some fascination for me. Though we do not all lose our teeth nor all lose our hair, every peridental membrane becomes more fibrous, all hair grows gray, both a sign of senile change and destruction. Senility is not necessarily a question of years; some are old at thirty, and the so-called end-organs are the first ones to suffer.

The reasoning of the medical man that carries off the deciduous teeth was nature's method of getting rid of these teeth is certainly not based on any scientific facts, and does not fit into this argument. Nature certainly takes advantage of congenital defects, but the lodgement of micro-



organisms in the fissures of deciduous teeth is simply incidental.

Dr. Kirk gives auto-intoxication a most prominent place in his paper. Though we do not know what the blood-stream carries to those parts, we do know that the expressions of auto-intoxication continually change. I have seen some of the most remarkable results after a Carlsbad cure, change of diet, mode of chewing, or change from sedentary habits to outdoor life. Automobiling has cured many sufferers from auto-intoxication—though many feel intoxicated when the monthly bills are presented. This is not only demonstrated and proved in man; it characterizes the life of the dog with equal force and truth. The more highly civilized he becomes, the nearer he reaches the ladies' lap and heart, the more certain he is to gain admission into the aristocracy of pyorrhetics.

We now have reached the pivotal point of Dr. Kirk's paper. Dr. Black, who has left an immortal imprint on everything pertaining to dentistry, tells us that what he termed "phagedenic pericementitis"—the Western Union would have doubled its rates on transmitting this title if telegraphed as a night message—has its principal seat in the lymphatic glands of the peridental membrane. Von Brunn and others who have made a special study of the peridental membrane do not, as Dr. Kirk tells us, recognize these bodies as being glandular. They call them epithelial rests, *débris* of the epithelial sheath of Hertwig, the embryonal tissue of the enamel organ. In hurriedly looking over Dr. Black's article and the splendid illustrations of Dr. Noyes which accompany it, I find that Dr. Black himself was not quite sure as to the glandular character of these organs. He tells us that when he first discovered these glands, he naturally expected to find ducts leading to the gingivæ. Later on he found occasional cell groups, indicating the possible presence of ducts. This led him to the opinion that they were lymphatics, an opinion with which he was never fully satisfied, because of the character of the cellular elements of these bodies. If these bodies, as it has been stated by later investigators, are but useless remnants of other organs, they act more or less as foreign bodies, and are pre-eminently susceptible to pathologic influence. This is the vital point of Dr. Kirk's paper.

If the studies of Black and Kirk mean anything at all, they mean that a concerted treatment, both local and systematic, is the only logical method of treatment. Dr. Kirk



might, at this opportunity, tell us something of his studies on salivary tartar formation based on the known experiments of Rainey. As I wrote in my review of the "American Text-Book of Dentistry" "It was left to Dr. Kirk to apply these researches in a most original manner to the formation of tartar, and supplement them with his own original thought." Although Dr. Black wrote his famous contribution in 1899, it may have been largely forgotten by the multitude of practitioners, and the profession must be grateful to Dr. Kirk for its emphatic repetition. The value and force of many of our great thinkers' statements are lost in passing, and it frequently takes other authorities to imbue them with new life and truth.

Dr. Geo. V. I. Brown, Milwaukee, Wis.: The last paper I heard Dr. Kirk read on this subject was a very exhaustive one, and undoubtedly one of the best presentations that has thus far been given of the essential findings of scientific investigators in the broader fields of pathology applied to pyorrhea alveolaris, at the same time giving due consideration to the local manifestations more particularly observed by mental writers in descriptive treatment of this affection. He has evidently designed this essay along somewhat different lines, in appreciation of the difficulty, almost uselessness, of trying to deal with all phases of such a subject within the necessary limits of a single article, and has endeavored to keep in view one particular division. The usual tendency is to complicate this subject too much in its discussion, and to consider the disease pyorrhea alveolaris as an entity quite different from other pathologic processes. That view I am not in sympathy with. We all know that whatever the physical condition of the tissues may be, by placing a foreign body of some kind at the neck of a tooth, where it will crowd down and irritate surrounding tissues—whether the irritating substance be a strip of rubber tubing, a ligature, calculus, or anything else of like nature—we can artificially produce all the symptoms which are recognized in pyorrhea. On the other hand, we also know that by the administration of mercury or other mineral poison, in spite of all oral prophylactic or other local treatment, one can cause eversion of the gums and destruction of the alveolar structures in a similar manner. What does this mean? It signifies that all of these etiologic factors, both local and constitutional, are important, and, as the essayist states—"Tissual derangements induced by toxic substances in the blood plasma warrant us in holding

to the belief in the sufficiency of auto-intoxication as a cause of this form of pyorrheal disorder."

With the admission of auto-intoxication as a primary etiologic factor in lowering resistance of the organism by weakening the defensive bodies of the blood, all the influences which find their expression in malnutrition, as described, bear an important significance, which demands that they be reckoned with in the etiologic consideration of this disease.

Since auto-intoxication may be general as well as local in effect, it is manifest that there must be some reason why the pericementum and its surrounding structures should be so frequently selected to give evidence of such functional disturbance. It is for this reason, then, that particular interest attaches to suggestions such as the "end-organ" theory of Talbot's, which is referred to, and the possibility of the gland-like bodies described by Black as being of embryonic origin; offering points of least resistance because of the degenerative type of their cellular elements rendering them perfectly susceptible to bacterial influences, and thus constituting a "*locus minoris resistentiæ*," as suggested by the essayist.

I believe that no modern histologist would agree to the drawings of these glands as they were originally outlined by Black, because they do not seem to be in harmony with our present understanding of the histological structure of the pericementum. On the other hand, there is no reason to believe, so far as I know, that the pericementum does not do its part in lymphatic activities the same as other tissues. The question of embryonic rests is one that has received a good deal of attention, as we all know, particularly in relation to Virchow's theory accounting for the origin of neoplasms. Clinically, we recognize that these growths have a tendency to appear very frequently on the sites of chronic inflammations. Whether they are really due to embryonic rests—and these more widely distributed than we have believed, as suggested by the essayist—and therefore subject to the excitant activity of inflammatory influences, so that in these conditions there is a tendency to multiplication of embryonic cells in the mouth, as in other parts of the body, with neoplasms as a result, or whether they are infectious in character, are matters that are still debatable and now very actively under consideration. It would seem to me, however, in applying this point of view

to our present subject, that if these embryonic rests really were so frequently present as to be accountable for so common an infection as pyorrhea alveolaris, that if there be any truth in the embryonic theory of cancer, and embryonic rests were so uniformly present in the pericementum, there would be a tendency for cancer to begin more frequently in this region; whereas, in my experience the pericementum is not often primarily the seat of neoplasms in their incipience, for the neoplasm usually has its beginning elsewhere and the pericemental tissues appear to be secondarily involved in the course of destructive processes.

There is, however, one other matter which is important, to which I desire to call your attention, and that is the possibility of a selective tendency in bacteria. For example, I recently saw seventeen hearts each with a similar lesion upon exactly the same valvular portion. Those seventeen hearts were gathered in one hospital, and study of the cases had led to recognition of the affection as due to a bacterium that had been isolated and definitely proved. For the want of a better descriptive term its discoverers called it a *vibrillum*. When I asked where this micro-organism gained entrance to the body, it developed that this was not known, but it was believed to be through the mouth. This example merely emphasizes the vital importance of mouth infections, and secondly, another not sufficiently considered element, the selective tendency of the micro-organisms in influencing bodily conditions.

The suggestions of the essay have brought to my mind in a somewhat forcible way the important bearing of two things Dr. Kirk has kept before us for years. First, the question of faulty metabolism in its relation to arthritism and other affections as well as pyorrhea alveolaris; second, the discovery that acid in the mouth precipitates the mucin of the saliva. When considered from a purely dental aspect, the possibilities of this action would appear to be merely relative to dental caries, but if one keeps in mind what it might mean to conditions of ill health along the line of the mucous membrane of the digestive tract to have a medium of that character thrown down which undoubtedly would hold the pathogenic micro organisms in contact with tissue surfaces, and protect them from those forces which have been provided for their destruction, its pathologic significance becomes one of vastly greater import. For example, we know that in ulcer of the stomach, the acidity of the secretions of that organ is an important factor. We also



know in many other diseases that under hyperacid conditions of the general system—to which the somewhat objectionable term acidosis is applied—there is a direct and very vital influence in relation to many kinds of disease. Personally, I believe all these things should have a bearing in the consideration of salivary mucin precipitation, and that this is particularly true in all forms of local oral infection, whether its expression be in one form or another. When a man like Murphy, the great surgeon, publishes illustrations showing cases in which he has resected knee and ankle joints and other portions of the extremities, and has found the primary etiological factor could be traced directly to mouth infection, we can no longer question the importance of mouth infection in the pathology of any region of the body, nor can we continue to doubt the susceptibility to circulatory conditions of the so-called end-organs, whether in the teeth or in the extremities.

The vital issue is, after all, a question of resistance, and this depends upon anti-bodies and various other conditions of the blood that are being actively studied by research workers at the present time. Naturally the diminished circulation of the more remote parts renders them more susceptible to infection. The same principles must apply not only to the pericementum and its diseases, but equally as well to the extremities and their diseases, and to organs that may by chance be weak in the individual.

These are the points that the paper suggests to me today. Dr. Kirk has shown much that leads to the consideration of the etiology and pathology of pyorrhea alveolaris in a direction which is toward unification with the already known laws of general pathology, and in harmony with the developments of modern research workers in this field, and I am so deeply impressed with the valuable and far-reaching possibilities of the salivary mucin precipitations that he has called attention to—if the pathologic effect of this influence could be rightly understood and applied to the prevention and treatment of disease—that this must be my excuse if it should appear that I have traveled too far afield in the course of this discussion, and have in consequence overlooked some of the important features of the paper.

Dr. J. O. McCall, Buffalo: It requires a good deal of temerity on the part of a youngster like myself to come forward and speak on a subject of this character, especially after men like Dr. Kirk, Dr. Brown, and Dr. Hofheinz. I wish, however, to emphasize one or two points that I think



of considerable importance, and that perhaps have not been emphasized sufficiently.

Dr. Kirk assumes that we have in most cases of pyorrhea an infection by bacteria, and he gives us to understand that the bacterial infection is the prime cause of the disorder; that is to say, that it is the principal factor in bringing about the destruction of the peridental membrane. Dr. Brown, on the other hand, tells us that this disease is simply a question of resistance—and that is the point I wish to emphasize. We know that wherever a tissue may be, whether in the mouth or in some other part of the body, no bacteria can gain entrance to it and bring about pathological effects unless the resistance of that tissue is lowered. In other words, healthy tissue does not become infected. Dr. Kirk has spoken of the effect of auto-intoxication in this tissue. He has spoken also of the accumulation of tartar, and various other phenomena which may bring about a mechanical irritation. To my mind, the mechanical irritation which has lowered the tone of the tissue to such a degree that bacteria can gain entrance to it is an important factor to consider. The essayist's contributions to the consideration of these glandular structures in the pericementum are very interesting, and point out a new field; yet we must consider these cell rests—or whatever they be—as part of this tissue, not only in mouths affected by pyorrhea, but also in all probability in mouths which are healthy. In other words, it is no more nor less a portion of the pericemental tissue than the peridental fibres themselves. The question of resistance, therefore, applies to that tissue as well as to any other. Tissue resistance concerns all tissue fibres, whether they be embryonic rests or vital parts of the tissue itself. Therefore we have to consider primarily the irritation which permits the invasion of this tissue by bacteria. That phase has been given much prominence in late years by such men as Dr. Skinner, Chicago, who have formulated a law in dealing with the problem of instrumentation and the maintenance of the tissues in a healthy condition through prophylactic treatment, their idea being that any irritation which may have brought about the lowering of the tone of the tissue must be removed, and the tissue then stimulated so that it may not suffer from further invasion of bacteria. The factors we must carefully bear in mind in considering this subject are the removal of irritation and subsequent stimulation of the tissues.

Dr. N. S. Jenkins, Dresden, Germany: It would be most presumptuous on my part to attempt to criticize with any degree of intelligence such a paper as has been presented to us to-day by our esteemed Dr. Kirk, for I have not had the privilege of reading the paper beforehand, and moreover it is not a subject which has in any very great degree occupied my attention of late years. I have had, however, a rather rare opportunity of observing the great confusion which obtains throughout Europe in particular in the treatment of this distressing disorder. I have seen all the modern methods of treatment, constitutional and instrumental, from the vaccine treatment—at one time somewhat more in effect in Great Britain than perhaps it is to-day and *was* throughout the whole continent of Europe—to its treatment with reliance only upon instrumentation, and I have been struck with this one remarkable fact: Whatever may have been the theories upon which these various operators have carried on their treatment, wherever there has been complete and thorough instrumental treatment, the result has always been the same.

Dr. Louis Meisburger, Buffalo: I am unfortunately one of the operators who treat this disease with instruments, wood points, and punice, as Dr. Hofheinz said, but at the same time I appreciate the value of fresh air, water, and cathartics. I am to discuss Dr. Skinner's paper, and what I will have to say on that occasion is what I should say at this time if I attempted to discuss this paper fully.

The question of etiology has been very thoroughly gone into by the essayist, but I do not believe that the idea of prevention has taken hold of the profession as strongly as it should. There seems to be no doubt that the original cause is one of malnutrition, followed by auto-intoxication. If food is properly assimilated and eliminated, and the system uses only the amount required for sustenance, no pyorrhea will ensue. As we all know, it is a filth disease, but in my opinion it is due to the tissue being in a state of lowered resistance. A few patients, however, exhibit large collections of tartar and still do not have pyorrhea. Therefore all such mouths should be thoroughly cleaned. Thorough instrumentation, no matter what the systemic conditions be, produces an improvement in cases of so-called pyorrhea, and I believe that true pyorrhea, in which pus is present, is found in people of lowered resistance, usually in hospitals.

I like very much the term used by Dr. Fletcher, in an article published in the *Dental Summary*, in which he refers to the beginning of pyorrhea as initial alveolitis. This is the condition which we are most often called upon to treat in our offices, and if we recognize and treat this condition early enough, we can prevent the distressing symptoms of true pyorrhea.

Dr. Edward C. Kirk (closing the discussion): In making this little effort to present to you in this paper a section of the study of pyorrhea alveolaris, I feel that I have accomplished a triumphant success in at least one direction, and that is the presentation of pyorrhea from the humorous standpoint—for it has always been regarded as a rather serious and solemn affair. Ordinarily, when I have attempted to talk about pyorrhea from the point of view from which I have presented it to-day, I have noticed that there has been a sudden outpouring of the audience toward the exhibit room; therefore, I take it that the humorous suggestions which the discussion has aroused have rather served to pleasantly sugar-coat this rather bitter scientific pill.

In a general survey of the discussion, I have observed certain things that always come out in connection with pyorrhea. Men ask what is its cause, and what is its treatment? Is it constitutional or is it local? ? Now, I want to answer these queries from my point of view, by saying that it is not "it" at all; that the man who asks what is the cause of "it" advertises the fact that he has not gotten hold of the first fundamental proposition, viz., that pyorrhea is not "it" at all, but is "they." Pyorrhea is a group of diseases; it must be a group of diseases, because we do have certain gingival lesions that we group as pyorrhea that are not pyorrhea according to the definition of the word pyorrhea; that is to say, we recognize certain gingival disorders as pyorrhea though they may have no pus accompaniment. We have certain destructive conditions in the retentive structures of the teeth by which they are exfoliated, so far as we can see, without the visible objective production of pus, while pyorrhea alveolaris means the flowing of pus from the alveolus. Therefore that atrophic form which we call pyorrhea is not pyorrhea in a literal sense, but a condition which we have grouped under a general classification of destructive gingivo-alveolar disorders, and to which for convenience sake we have applied the generic term of pyorrhea alveolaris.



I am glad that somebody has found a definition that pleases Dr. Meisburger—"initial alveolitis,"—that is, literally, the beginning of an inflammation of a hole. I do not know how we can have inflammation of a hole; so I think we shall have to go farther than that for a comprehensive terminology. We have many names for these disorders; many have had a hand in baptizing them, but we will never get a proper terminology to describe these conditions until we first recognize that they are members of a group of disorders having the common factor of causing loss of teeth, that they must be classified according to the symptoms, etiology, and pathology involved, and that they cannot rationally be called by anybody's name. There is a movement to prevent the dental nurse from treating Riggs' disease in Massachusetts, and I have asked what in Heaven's name is Riggs' disease. I think they will prevent her from treating Riggs' disease, because there is no such thing.

The next difficulty is in our conception of the real cause. Sir William Osler said, in his book on the Practice on Medicine, something like this: "Very few people die of the disease from which they have been suffering most of their lives,"—for the reason that we have predisposing conditions of ill-health dependent upon or resulting in malnutrition which leads us up to the point where a terminal infection by some kind of pathogenic bacterium sets up a disease process of fatal character and the individual dies. The question is, What is the cause of his death? Was it the terminal infection? or was it the condition preceding the bacterial invasion? We must include the predisposing factor as well as the immediate exciting factor in our conception of the cause, and because that is the proper attitude of mind toward the question of cause, we must take that view into consideration before we can answer the question as to whether it is local or constitutional. My own opinion is that it is both, and I have tried to express it as a local manifestation or a local lesion which is symptomatic of the predisposing constitutional cause, for the reason that these things must be considered together.

Let us get away from the idea that this group of diseases is necessarily either local or else constitutional. We cannot have a local condition without constitutional relations. I do not know of anything in the category of diseases—not even corns—that may not be in some degree the cause or the result of some form of malnutrition. A tight boot which



presses on a corn long enough to disturb your appetite for dinner may upset your digestion and start a condition which will bring about for the time being malnutrition, then reduced resistance, and ultimately an infection—all, in a general sense, because your boot has been too tight. That is not a “far cry,” but is a possible case.

I want to speak of the importance, to my mind, of determining the nature and character of this particular tissue in the peridental membrane which Dr. Black in the beginning spoke of as lymphatic glands, later expressing a modification of that view by saying that they were lymphatic in character. However, Black still makes the statement that they are not epithelial—and that point is important, because in that statement he ranges himself on the opposite side of the question from those who have preceded him in the embryological study of these structures. Black's investigations are quite independent of those of Malassez, Magitot, and Von Brunn, but the groundwork was very thoroughly gone over by these men. I was surprised to see what a large amount of literature there was upon the question of this phase of the histology of the peridental ligament. A large number of men who have studied the subject from the embryonal beginnings of the tissue up to complete formation of the structure of the peridental membrane regard these gland-like bodies as being of epiblastic origin. Now, it seems to me that above all things the fundamental question to determine is just that point—whether these cells are epithelial in origin or endothelial; that is important in relation to the question of their pathogenic relationship to not only pyorrhea but to a number of other pathological processes, and particularly the etiology of certain neoplasms.

Dr. Brown has spoken of the selective character of certain types of bacteria for certain tissues, and I wish he had gone farther. I am not disposed to doubt that view of the subject, but what I am trying to look at is the selective character of the tissue for the bacterium—if I may put it that way. We have examples of this selective action everywhere. We may expose a pint of milk and a pint of cider to the air, and the two will in time be decomposed into their ultimate end-products, one by putrefaction and the other by fermentation. Now, what makes the difference? Both are sifted full of bacteria of various types, which produces mixed infection, and certain bacteria survive and certain others die, and here we have shown the selective quality

of the medium for the particular organisms that can thrive upon it. One view of this fact, that of Dr. Brown, implies intelligence on the part of the bacterium, and the other implies the absolute, unassisted, unintelligent action of natural selection, which is the point from which I prefer to view it—and that is what I mean when I speak of the selective character of the tissue. If these peculiar bodies found embedded in the peridental ligament are epithelial, as I believe them to be, and they are degenerative in character, as in the condition to which Dr. McCall referred, when there is a depression of the whole organism, and these relatively weak tissues become first infected, they become infected in the order of their relative power of resistance.

The other point which Dr. Brown brought out, and which I had hoped he would elaborate still further, is the question of the relation of these bodies, these cells to neoplasms. I do not believe we have yet satisfactorily accounted for the thing which he has observed and which I have observed; that is, the development of leukoplakia buccalis from the first symptom, that milky whiteness that appears on the surface of the buccal mucosa, through that fishskin condition which marks the gradual inroad of the invasion of the neoplasm and its subsequent evolution into epithelioma. I would like to have Dr. Brown's view with reference to the possibility of certain types of epithelioma arising from the peridental ligament membrane. I have been looking for these cases with the hope of determining whether or not these so-called rests may not under certain stimuli take on a morbid growth and develop into the neoplasm of epithelioma.

The question was raised by Dr. Hofheinz as to whether pyorrhea might not be produced, at least in its early stages, by auto-intoxication before the infection by bacteria.

Dr. Hofheinz: My question was whether it only becomes true pyorrhea after the bacterial invasion.

Dr. Kirk: I do not see how it could be anything else. Dr. Black, even before I was born, laid down the axiom that, in referring to scientific matters, we must use words with precision, and we cannot call it pyorrhea without the "py," which means a result of infection by pyogenic organisms.

Dr. Hofheinz: But, as you said before, we must speak of "them," not "it." We classify a number of conditions, for instance, atrophic pyorrhea, where we do not have pus,

and yet we call it pyorrhea.

Dr. Kirk: But for the time being we are limiting the discussion to the one in which there is pus infection.

I regret that Mr. Hopewell-Smith is not here, but I believe that this discussion will act as a prolog for the study of the relation of these gingival tissues to pyorrhea, which I understand is the subject of his paper, and I am glad to know that we are to have the benefit of his skilled observations and mature judgment upon this particular thing. It was a coincidence, without the slightest pre-arrangement, that what I have said is merely a "curtain-raiser" for what he will present, and which may either destroy the fabric of my paper or strengthen it.

I want to thank you for your patient hearing of this time-worn topic.—*Cosmos*.

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### ***Bottle Babies.***

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By M. EVANGELINE JORDON, D.D.S., LOS ANGELES, CAL.

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ONE reason why the children in the public schools have such defective teeth is because many of them were bottle babies.

It was recognized very early in the study of carious teeth that the child who was raised at the mother's breast had better teeth, better-shaped jaws, and was probably freer from adenoids and enlarged tonsils, than the bottle-fed baby.

It remained for the dentists practising exclusively for children to discover the very serious results that may be traced to bottle feeding.

First of these is early decay of the teeth, and the second is the deforming of the jaws.

That the teeth break down early is shown by the records of a children's dentist, where many children, from eighteen months to two and one-half years of age, are brought with one or more teeth decayed and broken off. The child cannot eat, and sickness and often death result unless relief can be obtained.

This sudden decay is found where artificial food or condensed milk, containing too much sugar, are fed. Con-

densed milk remains between the upper teeth and lip and sours. The lactic acid that forms cuts into the teeth, which quickly blacken and break off. After the tooth is broken, the pulp, which is composed of the nerve and blood-vessels, dies, and the pus which forms mixes with the food and poisons the child. The pus often burrows into the spongy bone around the roots of the teeth and causes the death of the bone. This is called necrosis.

A few treatments sealed into the tooth will heal the abscess, and the tooth can be filled and remain in service until the proper time for it to be shed.

If a tooth is extracted, the child suffers because it has less masticating surface, and the space is lost by the moving together of the other teeth, so that when the successor to the tooth appears there is no room for it. If the teeth are not filled nor extracted, the cavities hold decaying food that, fill with disease germs, which multiply and spread through the body. It is now believed that, because of this condition in the mouth during childhood, the seeds of tuberculosis are planted in the body, which, later in life, may suddenly develop and cause the person's death.

The prolonged use of the nursing bottle causes the upper arch to grow high and narrow, which results in a permanent lengthening of the face. The upper front teeth may project and prevent closing of the mouth, and the sufferer is subject to inflammation of the throat and tonsils. The air-passages of the nose become smaller, and the growth of adenoids is induced.

If the upper teeth are broken off very early the lower jaw, having no support, may sag forward and remain in the protruding position.

Where artificial feeding cannot be avoided, the watchfulness of the mother may do much in the prevention of these troubles. The nose must be kept clean, so that there is no obstruction to free breathing. The bottle must be taken from the child as soon as empty, and pacifiers must never be used. The mouth must be kept very clean, and as soon as the teeth appear they must be kept free from stain. If the food is sweet, magnesia will counteract the acid and keep the stomach more healthy.

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## ***An Interesting Legal Point Raised in Saskatchewan.***

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**A** FEW months ago a writ was issued, asking for a mandamus to compel the College of Dental Surgeons of Saskatchewan to allow the plaintiff, Dr. Harold C. Hodgson, of Saskatoon, to write the final examinations in dentistry without the necessity of taking the preliminary matriculation examination.

Dr. Hodgson is a graduate of the Baltimore College of Dental Surgery, and desires to practise in Saskatchewan.

The case seems to hinge around the validity of the following By-law:

“All applicants for final examination, who have graduated since January 1st, 1910, shall be required to submit to the President of the University of Saskatchewan, as part of the final examination, certificates showing an educational standing equal to junior matriculation, or pass the junior matriculation before the President of the Saskatchewan University, and the President of the Saskatchewan University is hereby appointed examiner of the Council for this part of the final examination.”

Dr. Hodgson went before the Provincial Legislature at the last session and endeavored to have a bill introduced overruling the decision of the Dental Council. The legislature refused to interfere, and Dr. Hodgson is now seeking, through the courts, to compel the Dental Board to examine him as to his professional qualifications, independent of his preliminary educational requirements.

Dr. W. D. Cowan, representing the Saskatchewan Board, was examined for discovery before the Deputy Local Registrar at Regina on Monday, July 14th, 1913. The result of the action is being awaited with interest by the dental profession.

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This Department is Edited by C. A. KENNEDY, D.D.S., 2 College St., Toronto  
Librarian, Royal College of Dental Surgeons of Ontario

*Helpful Practical Suggestions for publication, sent in by members  
of the Profession, will be greatly appreciated by this Department.*

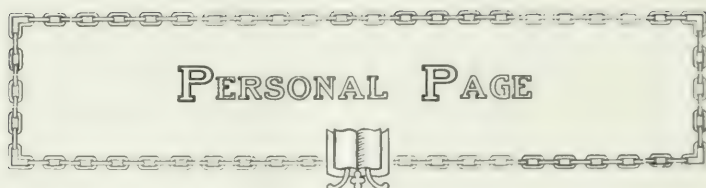
GETTING BITE OF WAX MODEL.—In getting the bite of a wax model for gold inlay, fold a small piece of rubber dam, wet it in water, and ask patient to close and chew on the rubber. This will give you the articulation and space to spare.

METHOD OF MAKING WAX INLAY MODELS BY THE DIRECT METHOD.—In making the wax inlay pattern by the direct method in deep proximo-occlusal cavities in molars and bicuspids, soften wax to desired consistency; press into cavity with the fingers, and immediately apply pressure to same with a blunt instrument or amalgam packer, condensing same as you would amalgam. If there should not be a sufficient excess of wax to bring out the outline at the base of the cavity, quickly soften a small amount of wax (preferably a softer one) and press to place.

DESENSITIZING SENSITIVE DENTINE.—Hypersensitive dentine at the cervical margin is best treated with a concentrated solution of sodium bicarbonate in glycerine, thus avoiding discoloration as produced by silver nitrate.—*Dental Cosmos.*

### HAVE YOU TRIED THIS?

In mixing two or more shades of the powder of silicates, to obtain a desired shade, a solid shade is the result. In many cavities a lighter shade at the cervical portion of the cavity is necessary for a perfect match. The best result may be obtained by having an assistant mix one shade corresponding to the color of the body of the tooth, while the operator mixes another corresponding to the darker shade at the cutting edge. A blending of these two mixes, placing the body shade first in the deeper portion of the cavity and adding the other shade at the cutting edge and shading it off, will give a result that in many cases defies detection.



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**D**R. JOSEPH E. WRIGHT, who has been practising in Medicine Hat, has opened an office in Aull Block, Calgary.

Dr. R. E. Stewart, of Elmira, Ont., spent three weeks this summer touring through the Western provinces.

Dr. F. P. Temple, who formerly practised in Dartmouth, but who has more recently been practising in the Canadian West, has returned to the East and taken the offices formerly occupied by Woodbury Bros., in Halifax, N.S.

The J. E. Wilkinson Company, Limited, has made an assignment to Arthur C. Neate, 69 Lombard Street, Toronto, for the general benefit of the company's creditors.

Dr. J. M. Dixon is opening an office in Medicine Hat, Alta. Dr. Dixon graduated from the R.C.D.S. last spring.

Lawn bowling has taken a firm grip upon the dental profession of Ontario, and a large number of good bowlers can be found among their ranks.

During the season several were found to be in the money of the big events.

In the Western Ontario Bowling Association Tournament, Dr. W. J. Fears' (Aylmer) rink were the winners in Labatt Trophy contest.

In the Dominion Bowling Association Tournament, Dr. E. W. Paul's (Canadas) rink, assisted by Dr. C. A. Kennedy as second player, were successful in winning the Ontario Cup.

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## EDITORIAL.

### *Fourth International Congress on School Hygiene.*

“He who helps a child, helps humanity with a distinctness, with an immediateness, which no other help given to human creatures, at any other stage of their human life, can possibly give them.”

—Phillips Brooks.

**I**F the child is the greatest asset of the race, human stock must have soared during the week of August 25.

For one whole week men and women, keenly interested in the various means of safeguarding the health of children in our schools, gathered in Buffalo for a more extended discussion of this subject than has ever been undertaken elsewhere.

There are some facts in connection with the Congress



that are of more than passing interest to the dental profession. Supervision of the health of school children is being recognized everywhere as contributing the only sound foundation for educational system. Wherever medical inspection of school children has been established, defective teeth and associated diseases have been found to make up the bulk of the physical defects, as well as contributing in many instances to others.

No one thing has done as much toward the placing of dental surgery in its proper place among the agencies for preserving individual and public health as the medical supervision of school children. The ill-cared-for mouths that have been brought to light, in their frequency, their filth and their disease, have forced a rapid recognition of the importance of mouth hygiene.

With this recognition on the part of educationalists and medical inspectors has come a new conception of the place of dental surgery in the field of preventive medicine.

Aside from the natural interest that members of the profession take in any movement which will benefit the child and the race, there is, then, a very real reason, from a professional standpoint, why medical supervision of school children should receive the united support of the dental profession.

Are you sure that the school children of your community have had all done for them that can be done to ensure their physical fitness? Are you sure that the health of some child, perhaps your own, is not being endangered by diseased conditions in other children that can be detected and prevented? The dental profession has in many places been in the forefront of the fight for supervision of the health of school children. Why, in the future, may this not be said of your community?

### *Its Up to Canada Now.*

**I**N the last issue of ORAL HEALTH there appeared an article by Dr. Weston Price, outlining the plans, policy and organization of the National Dental Association in relation to dental research. Our American friends have evidently a large vision of the future, and have established a research organization upon a basis that will surely make for permanency and efficiency.

Science and literature know no country. Their products are not "held up" at the boundary line for customs inspection. Thought is as free as air, and passes freely from nation to nation throughout civilization. Humanity and Dentistry everywhere will profit by the unselfish sacrifice of American dentists. An obligation thus rests upon the dental profession, as an organized fraternity, to lend its help in the solution of problems common to all. Every organized unit is morally bound to add its quota of scientific knowledge to the general store from which it draws.

The dental profession in Canada, being well organized, cannot preserve its self-respect and sit idly by while our American confreres are laboring at problems, the solution of which will benefit Canadian Dentistry and World Dentistry equally as much as American Dentistry.

At the last meeting of the Ontario Dental Society a Commission on Research was established. No financial provision was made for research work, so that the work of the Commission will necessarily be confined to the available hours its members may have to give to this work.

The lack of funds is at once the weakness of the Ontario Commission and the strength of the American plan. Under the latter, men who have an aptitude for scientific work, and who have received special training may be employed to devote their whole time to research, and at the same time the co-operation of the entire profession is assured by the opportunity given every dentist to give financial support to the work.

We, in Canada, doubtless cannot do better than follow the lead of the United States and work out our research problems along national lines.

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### ***Series of Articles on Anatomical Articulation and Impression Taking.***

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**C**OMMENCING October, we publish the first of a series of three articles on "Impression Taking" and "Anatomical Articulation" by W. E. Cummer, L.D.S., D.D.S., Toronto, Professor of Prosthetic Dentistry, Royal College of Dental Surgeons of Ontario. These articles will appear in the October, November and December issues of ORAL HEALTH. Sixty cuts are being prepared for use in this series, which indicates how thoroughly the articles are to be illustrated.

Dr. Cummer, recently returned from the post-graduate course given in New York by Dr. Alfred Gysi, of Zurich, gives in simple, forceful language his impressions of Dr. Gysi, of the course, and the essential factors in Anatomical Articulation. The article on "Impression Taking" should be read by every dentist. It contains something out of the ordinary, and will give many new and practical pointers of value to practitioners.

The Royal College of Dental Surgeons is to be complimented upon being the only Dental College having representatives at this course. In addition to Professor Cummer, Dr. Percy Moore, of Hamilton, Examiner in Prosthetic Dentistry for R.C.D.S., was in attendance.

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### *Fraternity.*

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**M**EMBERS of the Dental profession do not fraternize as they should. This is as true of the smaller town as of the larger centre. Get together. Personal pique, small, petty jealousy, and false social standards are relics of the darker ages, and have no rightful place in the pure sunlight of the present day.

Push for greater and more sincere fraternity, that the unsolved problems of the profession may be attacked with undivided front and every hand in the fray.

Work for such a spirit of fraternity that members may take sufficient interest in the profession of to-morrow to secure the brightest and best young men for dentistry, that the highest ideals and standards of the profession may be maintained.

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### *Obituary.*

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**T**HE large circle of friends of Dr. Charles A. Meeker, Newark, N.J., Editor of *The Dental Scrap-Book*, will regret to hear of his demise, on 8th September, 1913. Dr. Meeker had been ailing since January, and confined to his bed since the last week in June. After much uncertainty, the real cause of Dr. Meeker's illness was finally diagnosed, and he was operated upon early in August for gall-stones.

Dr. Meeker had arranged to sail for Scotland in the hope that a sea voyage would prove beneficial, but did not rally sufficiently after the operation to undertake the trip.

## The Qualities of Good Citizens.

*By Bishop Phillips Brooks*

I plead with you for all that makes strong Citizens. First, clear convictions; deep, careful, patient study of the government under which we live until you not merely believe it to be the best in all the world, but know why you believe.

And then a clear conscience---as clear as in private interests; as much ashamed of public as of private sin; as ready to hate, rebuke, and vote down corruption in the state, in your own party, as you would be in your own store or church; as ready to bring the one as the other to the judgment of the living God.

And then unselfishness---an earnest and exalted sense that you are for the land, and not alone the land for you.

And then activity---the readiness to wake and watch and do a citizen's work untiringly, counting it as base not to vote at an election, not to work against a bad official, or not to work for a good one, as it would have been to shirk a battle in war. Such strong citizenship let there be among us, such knightly doing of our duties on the field of peace.



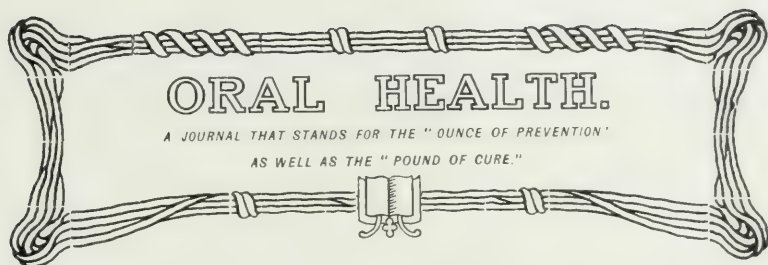


Back Row (Standing) Messrs. Carman, Bridges Osborne, Harold Franz, Dis. Palmer and Schwartz,  
Mr. Carmichael, Dr. Fulfield, Mr. LeRoy Franz.

Middle Row (Sitting) Drs. Cumner and Geo. H. Wilson (President) Professor Gysi,  
Drs. Zurbrugg (Secretary) and Campbell.

Lower Row (Sitting) Dr. W. H. Thompson, Mr. L. S. Supplee,  
(Drs. Percy Moore and G. W. Clapp unavoidably absent at sitting)

FIRST CLASS, GYSI SCHOOL OF ARTICULATION, NEW YORK, AUG. 4-25, 1913



**VOL. 3.      TORONTO, NOVEMBER, 1913      No. 11**

## ***Professor Gysi's System of Anatomical Articulation.\****

By **W. E. CUMMER, L.D.S., D.D.S.**  
 Professor Prosthetic Dentistry, Royal College of Dental  
 Surgeons Toronto.



**Dr. W. E. Cummer**

**W**ITHOUT a doubt the technique which has crystallized from the research and experience of this master mind through the last twenty-five years marks an epoch in the history of dental prosthesis, and makes possible the mechanical perfection of mastication under artificial conditions unthought of in the past, and, while at first glance the apparatus may seem complicated and the operations difficult and involved, in reality it is wonderfully simple in view of the complex movements of the mandible; and the measurements after a little practice may be taken surprisingly quickly and accurately. Com

\*The writer does not undertake to describe the system of anatomical articulation now in general use. See SNOW, Anatomical Articulation; CLAPP, Mechanical Side of Anatomical Articulation; Dental Review, March, 1908; Dominion Dental Journal, July, 1911.

pensating curves may be carved, but are not necessary providing the teeth are properly shaped and ground, and the profession is promised bicuspid and molars in the near future, the result of Professor Gysi's researches, which, it is said, will require practically no grinding except possibly for an occasional abnormal case.

#### MOVEMENTS OF JAW.

In the opening movement, or the simple depressing movement of the lower teeth, the present-day idea of both condyles moving forward and downward in the condyle path during the opening movement corresponds with the results shown in Professor Gysi's researches. In the masticating movement, however, the discovery of two additional movements fundamentally affects the form and arrangement of the artificial teeth, namely, rotation points and lateral movements.

#### LATERAL MOVEMENT.

Previous to Professor Gysi's work it was thought that during mastication, when the jaw was swinging laterally to the cusp to cusp or three point contact position (Fig. 11), previous to the cusps returning to their respective sulci (Figs. 12 and 13), that a rotary movement on the opposite

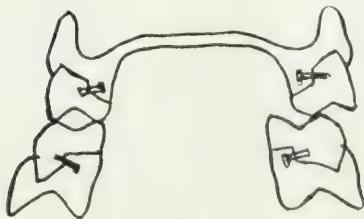


Fig. 11

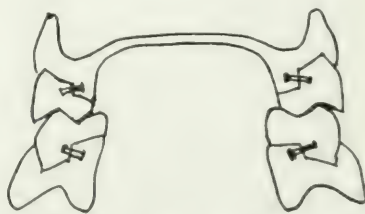


Fig. 12

Shows the cusp action (in section) on either a normal natural denture, or properly constructed artificial denture. On the masticating side the mandible is obliquely depressed, moved over to that side by the pterygoid muscles, carried upwards by the masticating muscles (temporal and masseter), until this cusp to cusp position is established, penetrating the food, and partly expressing the juices therefrom. The lower jaw then is drawn obliquely toward the median line, until the lower buccal cusp rests in the upper masticatory groove, Fig. 12, crushing the food and forcing it between the cusps and buccal and lingual inter-cuspal spaces, and after the process is repeated a sufficient number of times thoroughly comminuting and insalivating the food. See Fig. 13.

condyle was made (Fig. 14). This conception has been proven by Professor Gysi to be incorrect, and that, in addition to a forward and downward movement of the condyle, lateral movement is made as below towards the median line,

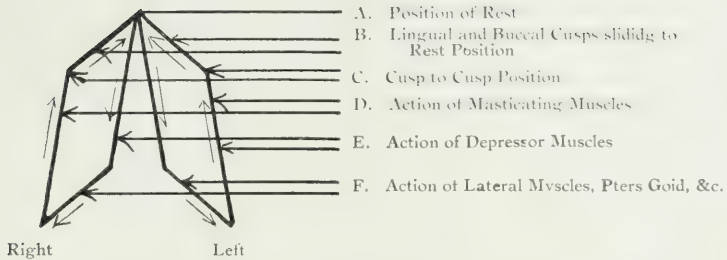


Fig. 13

Shows cycle of vertical and lateral movements of the mandible in masticating function. Beginning at A, the position of rest, with buccal cusps of lowers in masticating groove of the uppers (Fig. 12 and Fig 56 NB), the jaw is depressed by the depressor muscles under the chin (E), and subsequently drawn further toward the masticating side, probably at the same time as the tongue thrusts the bolus of food between the teeth, the action chiefly from the pterygoid muscles (F). Then the masticating muscles draw the separated teeth to the cusp to cusp position (Fig. 12 and Fig. 56 NB), condensing the food and expressing the juices, and then the balance of the movement, B, the cusps slide home back to the rest position (Fig. 12 and Fig. 56 NB), performing their grinding and masticating function.

of which a simple means of record will be subsequently described. (Fig. 15.)

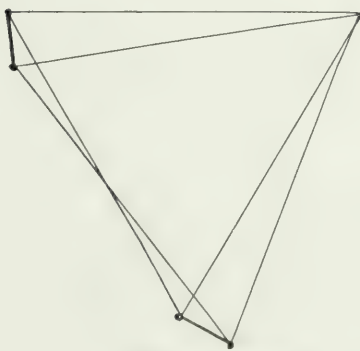


Fig. 14 Incorrect

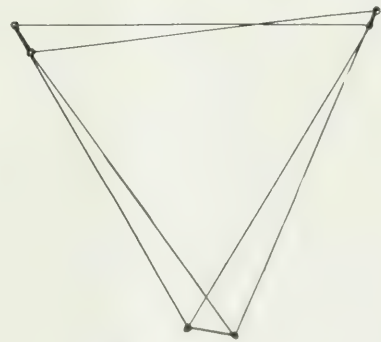


Fig. 15 Correct

Schematic representation of the correct and incorrect theories regarding the movement of the mandible at the condyle during lateral movement referred to in text and Figs. 14 12 13. It has been supposed that when the jaw was swinging to the masticating side (E and F Fig. 13) that it was simply swinging in a rotatory movement with the opposite condyles as centre. Professor Gysi has shown this to be incorrect, and that in the lateral mastication movement, the whole mandible moves inward laterally as well as forward, while on the other side the condyle, instead of merely rotating, Fig. 14, moves slightly outward, Fig. 15. See also Figs. 17, 18, 34, 36 and 42.

It may be readily seen that if such a lateral movement



is not recorded and incorporated in the movements of the articulator that a cusp interference will be set up that results in either one or both of two things: Tipping of the denture or irritation to the mucous membrane by movements of the dentures, especially in the lower, in which the area of contact and support is less (Fig. 19).

#### ROTATION POINT.

Previous to Professor Gysi's work it was also thought that, when the jaw was swung to one side, that the rotation took place at the condyle (Fig. 14), and all articulators previous to the Gysi have been constructed on this principle. Professor Gysi has proved that this is incorrect, and that, in addition to the lateral movement, previously mentioned, that correct rotation points must be established on the articulator. Instead of the jaw rotating in the centre of the condyle, it is usually found (by a simple process described later in the text), to be approximately at a point distal to the condyle and about half way between it and the occlusal plane and half this height to the distal (Fig. 16), and at varying distances from the median line.

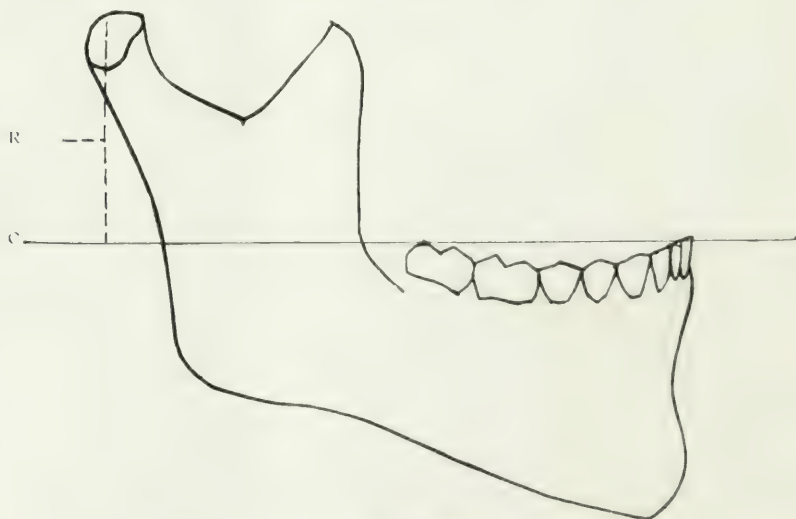


Fig. 16.

Most frequent position of rotation point viewed from the side about one half the height of the condyle above the occlusal plane (C) and one-fourth of this distance to the distal and at varying distances from the centre or sagittal plane. This last cannot be shown in this diagram, but may be seen in Figs. 17-18.

The importance of rotation points may be seen by refer-

ence to Figs. 17 and 18, which will show the difference of the

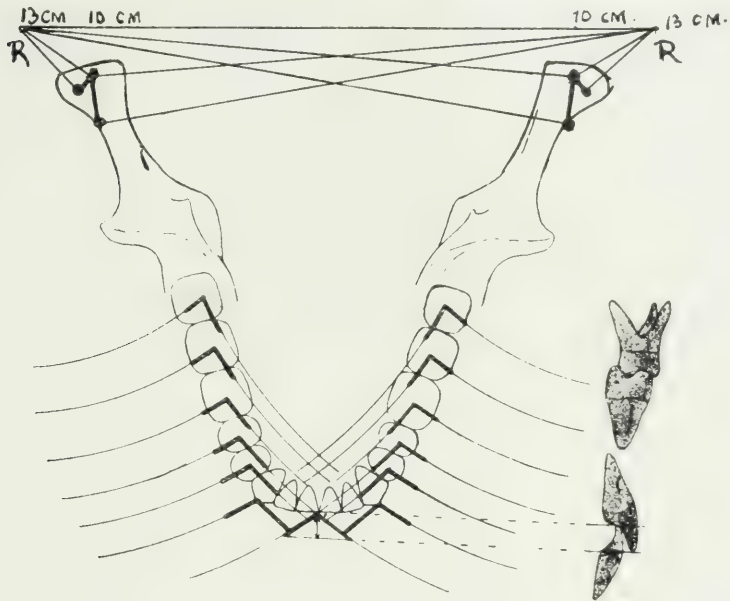


Fig. 17

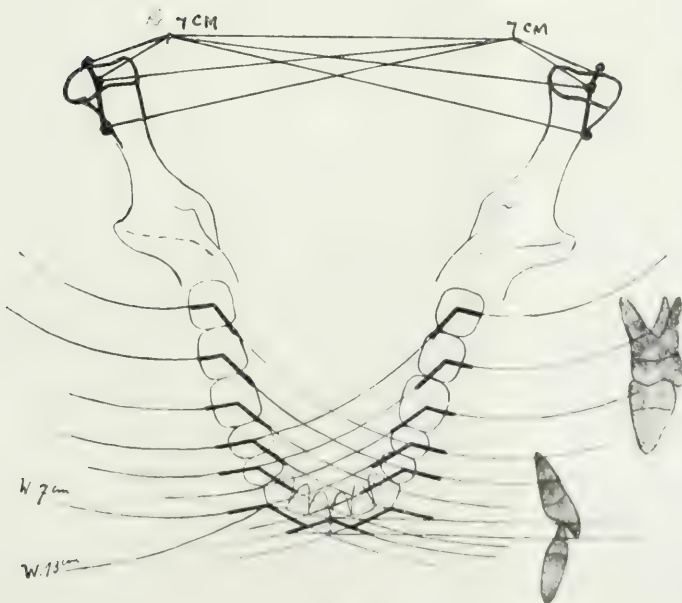


Fig. 18

Adapted from Gysi Cosmos, 1910

Fig. 17-18

Fig. 17 shows rotation point 13 CM apart from the greatest distance, and to the distal as shown in Fig. 16. In a side movement, say towards the left of the page, the jaw is swung, not from the condyle, but at the left hand R, the rotation point. The condyle nearest R takes the short path the ends of which are joined to the two short radii running from R, and the condyle farthest away from R follows the longer path, the ends of which are joined by the two longer radii from R. The heavy lines, therefore, denote the travel of the condyle in the glenoid fossae. Note also the oblique lines running from the centres of the teeth themselves, which represent the travel of the upper lingual cusps in side movements. In a side movement toward the left of the page, the lingual cusps on the upper on the right side of the page would describe areas obliquely forward on the occlusal surfaces of the teeth on the right side of the sketch, while on the masticating or side nearest the rotation point the cusps of the upper travel buccally through the intercuspal spaces. Fig. 18 is similar to Fig. 17, except rotation points on 7 cm. apart instead of 13 cm. If the mandible swings say to the left of the page, the jaw swings from the left hand R or rotation point, and on the left side the condyle describes the short arc of the circle with R as centre, joined at each end by the two short radii—while on the other side the condyle travels forward, describing the arc touched at either end by the longer radii from the left hand R. Note in Fig. 18 the difference of the cusp travel in the two lines described by the lower cuspid, one with rotation points at 7cm. and the other at 13 cm. Note also that with widely separated rotation points and forward travel of the cusps of lesser obliquity, as in Fig. 17, admits of greater cusp height and overbite, as shown by small sketch at side of the page, while in Fig. 18, with rotation points close together, the forward travel of the upper lingual cusps in the masticatory groove of the lowers is more strongly oblique, necessitating lesser cusp height and overbite, as shown at the side of the diagram.

direction of travel in the lower groove by the upper lingual cusps, brought about by difference of position of rotation points. And following a system of anatomical articulation which does not recognize and include in the articulator these movements is to incur the possibility of mechanical interference in the necessary masticating side movements, thus minimizing the value of previous careful technique (Figs. 19 and 20).

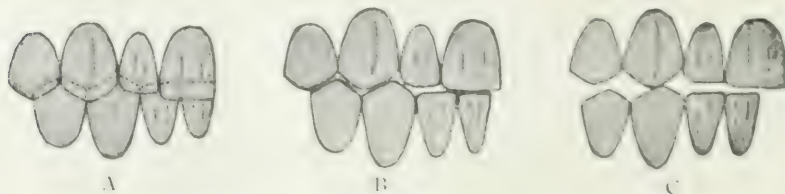


Fig. 19

A shows the half of the anterior upper and lower eight in a position of rest. B position during side bite, if correct, rotation points and lateral movements is incorporate on the articulator, and teeth are correctly ground and placed. C, showing interference due to incorrect rotation points and lateral movement. This interference is also found between the cusps of the bicuspid and molars under similar conditions.

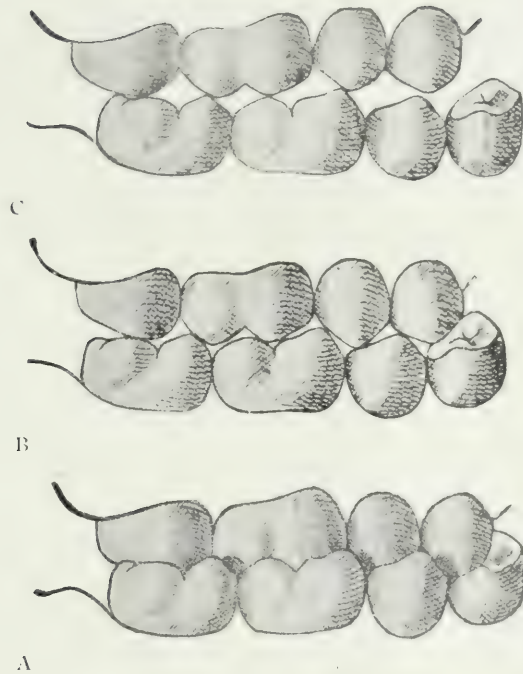


Fig. 20

Shows intercuspal movement views from lingual when all the conditions have been observed. A—State of rest. B—Side bite. C—Forward bite. Note contact between cusps and absence of interference.

#### INCISOR PATH.

The part played by the compensating curve in anatomical articulation also comes in for considerable revision according to Professor Gysi. His contention is that the present day idea of the compensating curve applies only to the herbivora, and does not permit of a proper incisor overbite, or one in which the lingual of the upper and occlusal of lower incisors are in contact in every masticating position. His contention is that, in the forward movement, the centre, instead of being above and ahead of the occlusal plane in the sagittal plane, to be below and behind.

This admits of a forward movement in which the lower incisor slides down to the lingual surface of the upper (spoken of as the incisor path and variable in different individuals) and distal slopes of the compensating upper cusps slide on the mesial slopes of the compensating lower cusps (Fig. 20 No. C., Fig. 22, Fig. 23 No. C., Fig. 23A, Fig. 24), thus



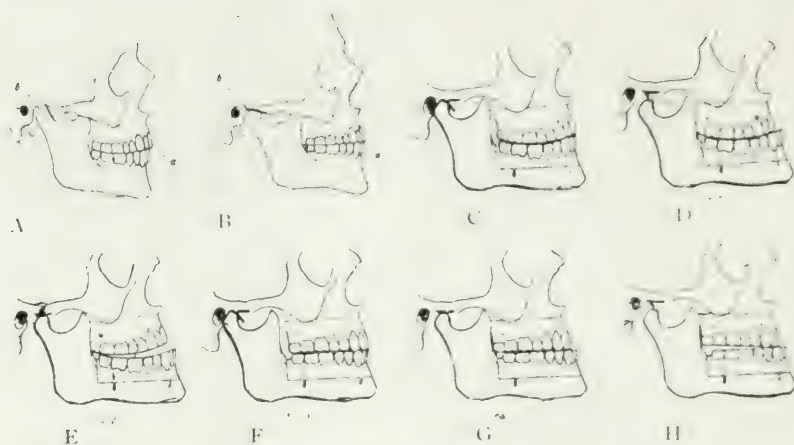


Fig. 21

Showing relation of curve of spee to condyle path, in extreme degrees of inclination and curve, according to Christanson, Snow and others.

A—Curve of spee and condyle path, 15° (continuous).

B—Curve of spee and condyle path (concentric), 15° condyle path.

C—Pronounced curve of spee with 45° condyle path, inclination at rest period.

D—Pronounced curve of spee and 15° condyle path, inclination forward bite-contact preserved.

E—Pronounced curve of spee and no condyle path inclination, undue pressure on molars and separated at incisors.

F—No compensating curve (or arc of circle of infinite radius) and no inclination of condyle path rest position.

G—No compensating curve and no inclination of condyle path in forward position, contact all round.

H—No compensating curve and 45° inclination of condyle path, undue contact on incisors and separation of molars.

Prof. Gysi's theory is shown in Figs. 22, 23, 23A, 24.

showing the compensating curve as subsidiary in its action in maintaining contact in different portions of the mandible to the more important cusp formation as shown above.

In his articulator, as will be seen below (Fig 27A), Professor Gysi has incorporated a fixed incisor guide inclined at 40°, which is considered an average, and which can be modified in cases where indicated by waxing strips of brass on incisor guide incline. This determines the movements of the artificial lower incisor, allowing the uppers to be set at the proper position for balancing and maintaining proper intercuspal action between the upper and lower posteriors. Also the maintenance of a properly inclined fixed incisor guide is, in a sense, of greater importance than the condyle path, being, as it is, at the forward end of the triangle, thus by its closer location exercising a more potent influence on cusp and groove formation than the condyle path.



Fig. 22

Gysi Cosmos, 1910

Showing the centre of the curve of Spee for a 33° inclination of the condyle path. Also showing Professor Gysi's centre for the same, showing a 60° inclination of the lingual or gliding surface of the incisors or incisor path already referred to. The sliding surfaces of the teeth incline at different angles between these two in the forward bite and admit of a proper or continuous overbite. Professor Gysi contends that "Spee's circles Z and C apply only to the forward bite of hoofed animals and ruminants, while my circles S and G apply to the forward bite of rodents and man."

### CONDYLE PATH.

The condyle path, as will be seen later on, is registered by a check tracing and is important inasmuch as it determines the position of the teeth in such a way that contact in all positions of the mandible is maintained, but, unlike previous systems, the condyle path is not the only factor, the rotation point, lateral movement, and incisor movement being also of greater importance. The greater the degree of inclination, the greater compensating curve is given the teeth, which assists the cusps in maintaining balance contact as shown in Figs. 23, 23A, and 24.

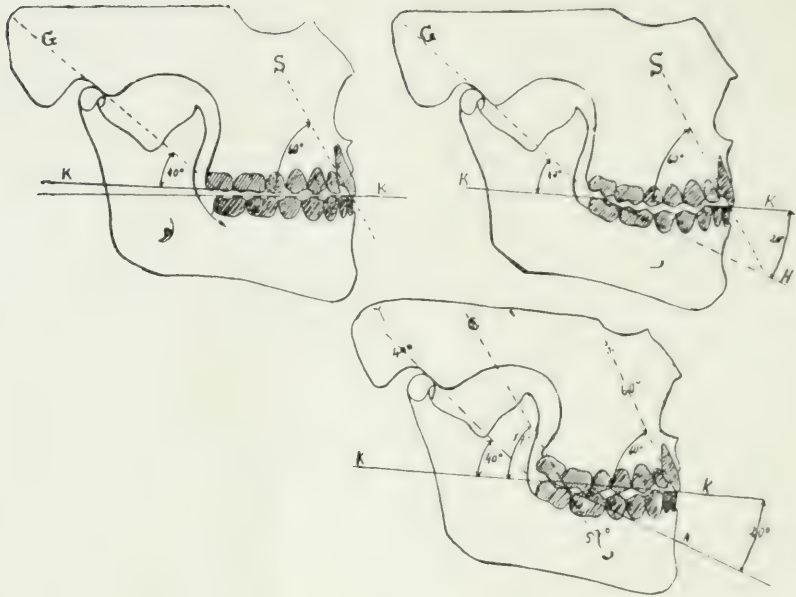


Fig. 23

Each case 40° inclination of condyle path.

A—Without the "tooth curve" curve of Speer and with low cusps the contact of molars is lost in the forward bite.

B—Tooth curve and low cusps not sufficient to retain contact.

C—Only with tooth curve and long molar cusps is the contact of molars retained in forward bite.

Professor Gysi, Cosmos, 1910.

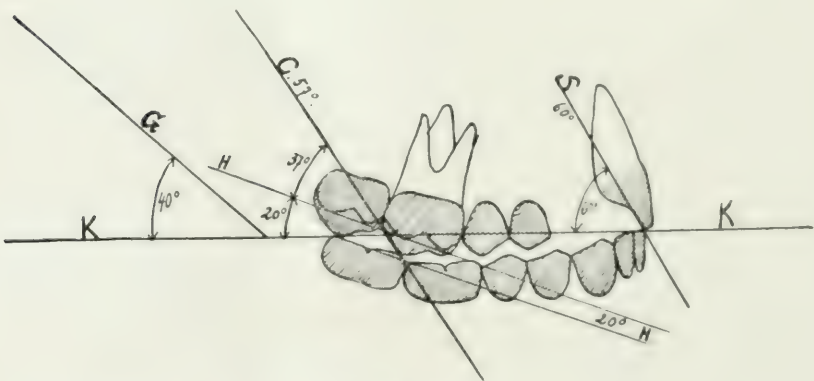


Fig. 23a

Shows how the tooth curve and compensating surfaces of the molars acting together retain the contact of the molars in the forward bite.

Professor Gysi, Cosmos, 1910.

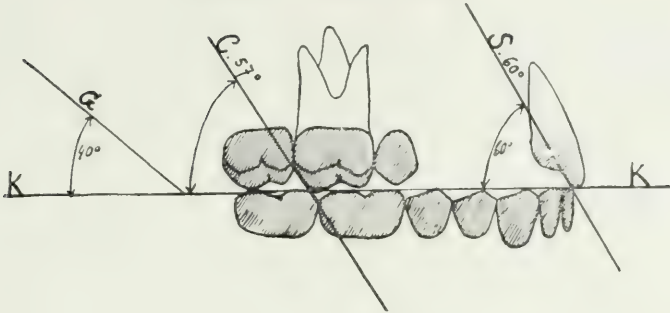


Fig. 23a

Without the tooth curve the compensating surfaces would have to be too much inclined. K, Occlusal plane. C, Compensating surfaces. H, Subsidiary curve. S, Incisor path. G, Condyle path.

Professor Gysi, Cosmos, 1910.

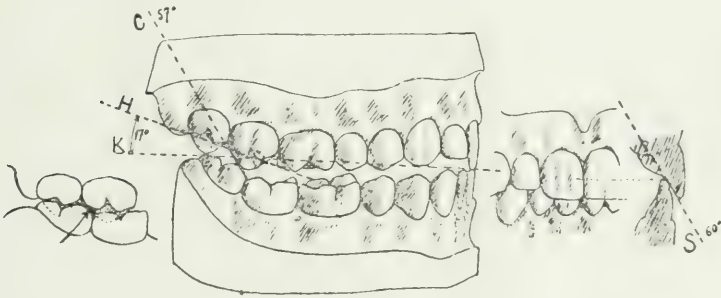


Fig. 24

Shows how contact of molars is retained through their compensating cusps when there is a long overbite.

Professor Gysi, Cosmos, 1910.

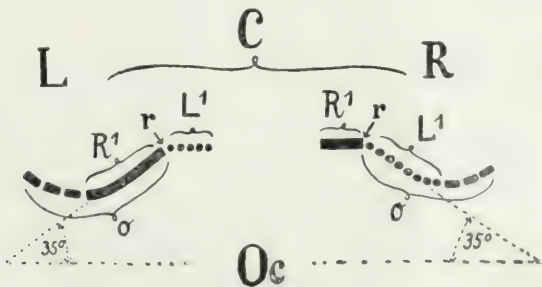


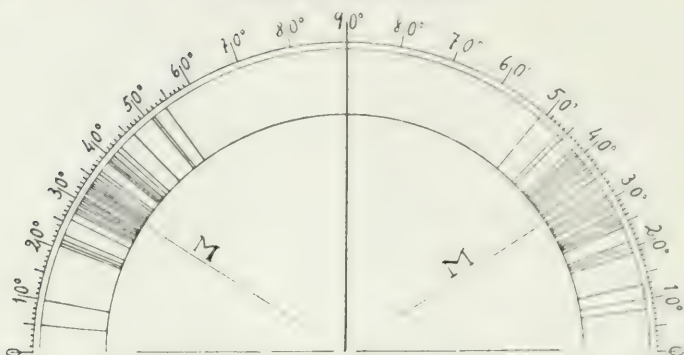
Fig. 25

Analysis of right and left condyle path as secured by method shown in Fig. 2. C, Condyle path. L, Left. R, Right. Oc, Plane of occlusion.

35°, Angle of middle part of path to plane of occlusion. r, Resting position of condyle. R', Path of condyle in a right lateral movement. L', The same in a left lateral movement. O, Forward bite or wide opening and closing movement.

Professor Gysi, Cosmos, 1910.





Showing average inclinations of a number of tracings. They differ in the same individuals from no degrees difference on the different sides to 41° difference, an extreme case (right 51 and left 10).

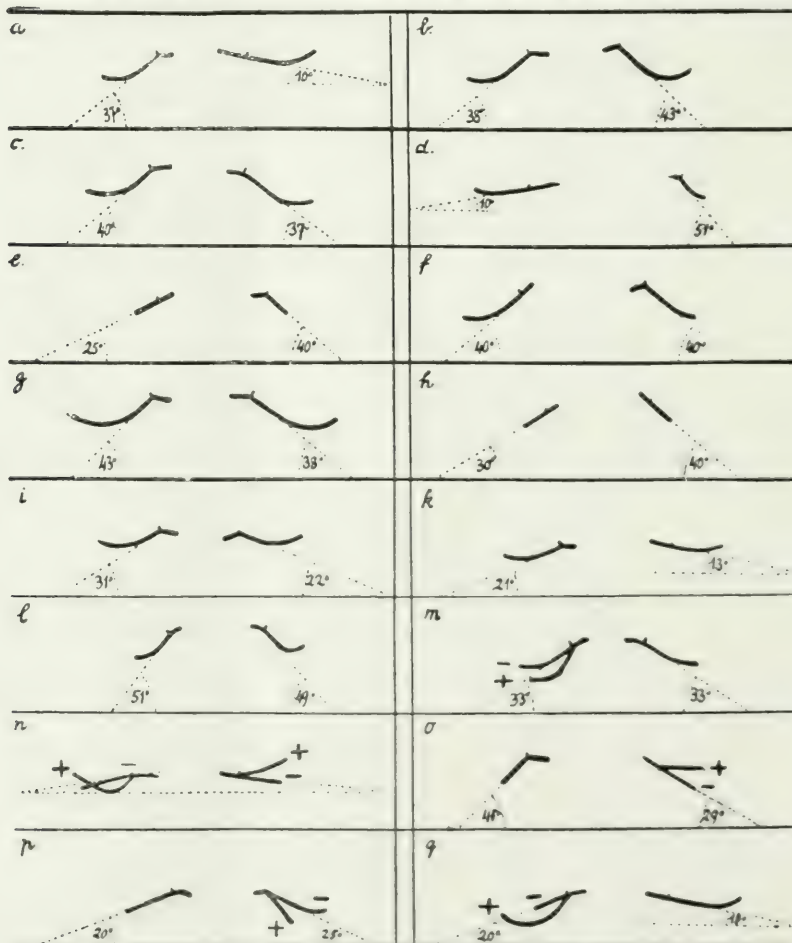


Fig. 26

Some characteristic tracings of the condyle path.

Professor Gysi, Cosmos, 1910.

(Dr. Cummer's article will be continued in the December Oral Health)

## ***Present Day Possibilities as Applied to Crown and Bridge Work.\****

BY HART J. GOSLEE, B.S., D.D.S., CHICAGO, ILL.

THE message which I have the honor to bring to you to-day does not teem with new or original thoughts, nor yet does it deal at all with abstract problems or theories. So much has been written during the past five years upon this subject of casting as applied to the construction of crown and bridge work, that it would be difficult, I think, for most anyone to bring to you much which might be called absolutely new.

My ambition, therefore, shall be directed more toward again giving emphasis to certain lines and methods of procedure in the concrete rather than to presume to offer anything of a startlingly original character; to urge you to adopt and perfect present methods rather than to look to and hope for new ones; and to impress upon you the extent to which my own methods and practice have been revolutionized during this period. This has been so marked, and my results have been so much better, that former chaos and empiricism have been forced to give place to order and method in my practice, the whole resulting in a degree of systematic procedure which offers and insures more or less definite results.

Since it is *results* which we seek, after all, and since the application of casting, together with other contributory improvements, make it possible to more perfectly systematize our work and to obtain results heretofore impossible, it is essentially my purpose at this time to call attention to present-day possibilities—what they have meant to me, and what they may mean to you—and to present to you in crystallized form the experience of a number of years; the practical side of crown and bridge work shorn of any garlands of theory.

As I look back over the methods of the past and compare them with those of the present; as I think of the empiricism which tintured our procedures then, and of the

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\*Read before the Toronto Dental Society, November 1st, 1913.

simplicity and practicability of our methods to day, and as I recall the results obtained then and observe those which are possible now, I am grateful for having practised dentistry in this era, and I bow with reverence to those who have made such improvement possible. I am not only grateful from the view point of the dentist, but also from the one which, though innocently, yet properly, profits most—the patient.

Whilst the epoch of “painless dentistry” has not yet been reached—excepting in the abortive claims of the charlatan—still the advent and the skilfull application of casting has done more to enlighten the burdens of the patient, and to distinguish the discomfort usually attending dental operations of any character than any other effort, and this to an extent which will cause the heretofore instinctive dread of the dental chair to occupy no place in the minds of future generations, unless it be only as an historical reminder of the dark age of dentistry.

And yet, with all of the importance which may be attached to this phase of the application of casting, it still remains that the greatest value lies in the fact that better adaptation and greater strength in our work is made possible and easier, and that these two primary prerequisites are absolutely essential to any class of work which must withstand the varying requirements of masticatory stress and meet the demands of modern cosmetics.

Modern cosmetics, as applied to dentistry, means the art with which the artificial may be concealed. The advent of porcelain has made it possible to so closely simulate the natural teeth as to conceal the artificial, but unfortunately porcelain does not possess the inherent element of integral strength which is demanded by average masticatory requirements. Many of us learned this from sad experience in the early wave of enthusiasm which accompanied the introduction of porcelain crown and bridgework of a certain type.

This experience taught us that to obtain the advantages of porcelain it must be used in its strongest possible form, and even then that it must be adequately supported and protected by the metal substructure.

The degree of accuracy and facility with which the required adaptation may be effected, together with the possibilities for obtaining adequate strength and desired form offered by the casting process, now enable us to use more porcelain and less metal than we formerly could do with safety, thereby subscribing to the cosmetic requirements to

a high degree without sacrificing either of the other requirements of adaption and strength to any appreciable degree.

Always believing that the strongest possible form of porcelain tooth would be the one in which no metal pins were backed, and that increased strength would obtain from cementing the tooth to the basic structure instead of subjecting it to the heat of soldering, or even of casting to it, I have been able to induce the manufacturers to make the tooth which is now known by my name. And the introduction and application of this form of tooth, combined with the casting process and used with good judgment and careful technic, has completely revolutionized and simplified my methods as to enable me to obtain results heretofore impossible, and to cause me to offer you the procedures which now constitute my methods of practice.

I have purposely emphasized the belief that a porcelain tooth or facing which has no metal pin or pins baked in it is stronger than one which has, and also that one *cemented* to place is stronger and less likely to become fractured than one which has been soldered or one which has been subjected to heat in casting. I also want to especially emphasize that casting directly to porcelain teeth of any form is fraught with danger and uncertainty, and that no possible advantage is to be thus obtained over the tooth which is cemented to place, providing its supporting base is well adapted.

In addition to the greater strength obtaining in the tooth cemented to its base, we have also the advantage of replacement, which is of paramount importance.

The methods which I now use are so few and so simple, and the results are so satisfactory, when compared with our previous efforts, that I am ambitious to aid all who may be interested. To this end, permit me to briefly epitomize the suggestions which I have previously made from time to time and the procedures which I now follow.

#### SINGLE CROWNS.

For all teeth within the range of vision, where porcelain is demanded, the porcelain replaceable or interchangeable crown, *with cast base*, and with a narrow band, is used wherever possible, and this constitutes a very large percentage of cases. Notwithstanding the almost daily controversy which the question of bands on dowel crowns brings forth, the frequent occurrence of fractured roots has caused me to have made an invariable practice of using a narrow band



on all cases, and no sane objection can be offered to the use of a band—*providing it fits*. In my opinion, inability to properly fit a band constitutes the only real good reason for condemning their use, excepting in those cases of extensive recession of gum tissue and process, or in cases where pathologic conditions or the age of the patient warrants only more or less temporary efforts on our part. This type of crown is undoubtedly the strongest, most artistic and most universally applicable substitute for the natural tooth at our command, and in all respects is excelled only by a skilfully adapted “jacket” crown. Indeed, for the average dentist it is better, and possesses an advantage over the latter in that immediate replacement in the event of mishap is possible.

In the construction of all forms of porcelain crowns with cast bases, much difficulty has been and is now being encountered in moulding the wax to a close adaptation to both the root-end, *particularly at the periphery*, and the base of the crown, and at the same time have it hold the dowel or dowels in the proper position to insure correct alignment.

These essential features are usually so difficult and so unsatisfactory as to have caused me to adopt and suggest a technic which eliminates any uncertainty, which ensures accuracy, which is applicable alike to all cases, whether a band is required or not, which makes the fitting of a crown to the most difficult root as simple as to the easy one, which relieves the patient of any discomfort whatever, and which, when in connection with the type of tooth mentioned, has proven the most satisfactory method of crown construction I have ever followed.

In the various methods now generally used and advocated, accurate results are difficult to obtain, because the very plasticity of wax makes it possess a tendency to *spread* when subjected to the pressure necessary to mould it to a clean, close adaptation.

This tendency has made it practically impossible for me to obtain a satisfactory degree of accuracy of adaptation to the root-end. However, such difficulty may be entirely overcome, and absolute accuracy obtained in all cases by first adapting a cap of *thin* pure gold (about 36 gauge) to the root-end. If this be carefully done, the surface thus obtained will always be a closer fit to the root than can possibly result from the molding of wax to it, and using any investment material now procurable. This surface will re-

quire no finishing whatever after casting, and the crown will readily snap to position on the root when finished.

Also, such a procedure reduces to a minimum the possibility of any change of form which may result from the warpage or shrinkage of the gold or alloy used in casting, and this is a very important consideration.

While the adaptation of the cap may be effected by burnishing directly to the root, in the mouth, the best, most accurate and least painful results are always to be obtained by *swaging*. This necessarily involves the impression and die (or indirect) method.

In cases where the space between the cap and the base of the crown is very small, or where it may not be convenient or seem necessary to cast the base, good results may be obtained by soldering instead of casting.

In such cases the porcelain also should always be backed up with 36 gauge pure gold by burnishing or swaging; the crown and backing then placed in position in relation to the cap, the porcelain removed, the case invested, and the space between cap and backing then filled with 22 or 20 karet solder.

This method is particularly useful in very short bicuspid, but where there is sufficient space to permit of casting, the results thus obtained are perhaps more uniformly strong.

This procedure reduces crown construction to a definite system; a system which requires but little time, which is simple, and which ensures a more or less perfectly adapted base, obtained without any of the usual discomfort to the patient. This latter feature is rarely possible when *burnishing* directly to the root-end it attempted.

The construction of a crown by this method involves but three short sittings, and the best results are to be obtained by doing all the work directly in the mouth.

At the first sitting the root is prepared, the root impression taken, the mold number and color selected, and a temporary crown mounted. This latter feature is desirable as a means of packing the soft tissue away to afford and insure a free exposure of the root-end at the next sitting, as well as to relieve the patient of the temporary embarrassment. The amalgam die having been made and the pure gold disc swaged and tooth selected *in the meantime*, at the second sitting the cap is fitted to the root, the dowel and tooth adjusted to the requirements, the dowel then soldered to the

cap, and the relation between the tooth and cap secured with casting wax. The crown is then cast, the tooth cemented to place and finished, and the final mounting made at the third sitting.

In the case of molars, upper first bicuspid, and malposed teeth, where one dowel will not enter the canal and at the same time sustain the tooth in its proper alignment, a separate short dowel must be used for the tooth, in addition to the one which enters the canal, and each should be allowed to remain as long as possible to permit of the proper adjustment of the tooth, and insure strength. In upper first bicuspid, if the dowel is placed in the buccal instead of the lingual canal, the adjustment will usually be facilitated.

Whilst there is no objection to backing up each tooth, in addition to swaging the root cap, and filling in between them by casting, it is not usually necessary. Such a procedure offers the advantage of insuring the ready adjustment of the porcelain tooth to the metal base, but at the same time it holds the tooth just that much further away from the root, which may result in the display of a line of gold in the completed crown.

#### GOLD CROWNS.

For second and third molars—and even first molars, when the presence of gold is not objectionable—the cast gold crown affords results far in advance of anything heretofore obtained. In the construction of gold crowns by the casting process, however, the fit or peripheral adaptation is, because of the spreading tendency of wax, *always best obtained* by previously fitting first form of band to the root and then casting directly to it.

When an exaggerated contour is not required (and it seldom is), the band may be made of 28 gauge, 22 karat gold, and fitted and contoured in the usual manner. When in position on the root, casting wax is then moulded to the end of the root inside of the band, and this procedure followed by an imprint in the wax of the opposing teeth in all of the movements of mastication.

After the band has been removed, its interior should be filled at once with casting investment material, and the occlusal surface properly carved, after which it may be invested and cast, using for the casting the same grade of gold of which the band was made.

If the band is thoroughly clean before investing, and the gold to be cast is of good quality and highly fused before

casting, a physical union will probably obtain, but if it does not, a small bit of 22 karat solder placed inside will insure the same.

A thin disc of platinum foil placed inside of the band and over the end of the root just previous to molding the wax will insure a smoother surface, and therefore a better seating of the finished crown after casting, than is to be obtained from investment material alone.

Where the root is very short, and the occlusal surface would therefore be unnecessarily thick, resulting in a finished crown which would be much too heavy, any surplus of wax may be removed by using a large round bur in the engine, or the Roach suction carver, just previous to filling the interior of the band with investment material.

Where an exaggerated contour is desired, the best results are probably to be obtained by first closely fitting a platinum band, about 32 gauge, to the root, trimming this even with its occlusal plane, and then soldering a top to it, thus completely boxing up the end of the root with close-fitting platinum cap. An impression and bite may then be taken and when the models are obtained all of the form and contour desired may be made with wax, and the casting made directly to the platinum cap.

These two general types of porcelain and gold crowns will meet with the requirements of single crown work in a very large majority of cases, and the results are far more accurate than are to be obtained by any of our former methods.

#### FIXED BRIDGEWORK.

In fixed bridgework, which constitutes an assemblage of attachments and intermediate dummies, our work may also be simplified, because three general types of attachments and three general types of dummies will be found to meet the requirements in an exceedingly large percentage of cases.

*Attachments.* The methods of obtaining attachment to the supporting teeth or roots embrace the porcelain replaceable crown with dowel and cast bases (the construction of which has just been described), as applied to the *roots* of anterior teeth, or when it is impossible or seems inadvisable to preserve the natural crown; the inlay, when the attachment is to be made to the *crown* of a natural tooth—which is good practice *only when the remaining natural crown is sufficiently strong*; and the gold crown for molar teeth when the use of an inlay is for any reason not indicated.

When an inlay is to serve as an attachment, the cavity



preparation is, of course, exceedingly important, and some form of *post or posts should always be used* to insure stability and as a provision against the inlay becoming loosened by the strain and torsion to which it is to be subjected.

The general applicability of the inlay as an attachment for bridgework has been a subject of considerable discussion ever since casting became an accepted practice. That it will serve the purpose as well as, and in some respects perhaps even better than, a full crown, there can be no doubt, providing, however, that its adaptation and stability are always insured.

The former adaptation depends, first, upon adequate and proper cavity preparation, and then careful technic in making the inlay; and the latter stability depends upon the use of a proper inlay in casting, and upon pins or posts of some form, for the reason mentioned.

Wherever the walls of the supporting tooth are *sufficiently strong* to insure permanency; whenever a suitable cavity may be properly prepared, the inlay, well seated and securely anchored, and made of a hard alloy, such as five per cent. platinum in pure gold, coin gold, or 22 karat gold, I am of the opinion that such an attachment may sometimes be even better than a full crown because less mutilation of the tooth is required, and no possibility of gingival irritation is afforded.

The cavity preparation for inlays to be used for the purpose of anchorage does not differ essentially from that for a simple filling, excepting that the *buccal, lingual and cervical* margins must be so extended as to carry the margin between tooth and filling beyond any actual contact of the artificial tooth to be supported by it, in order that each and all of these margins may be exposed, for hygienic reasons. The possibilities for obtaining a good close adaptation of the inlay to the cavity margins, and thus insure permanency in the attachment to the natural tooth, are such as to relegate the open-face crown, the "hood," and the so-called Carmichael attachments, etc., to the archives of the past.

"*Dummies*". As dummies for fixed bridgework, three general types will answer the requirements in all cases.

The all porcelain replaceable crown and bridge tooth with cast or otherwise well re-enforced backing, is adapted to all positions in the arch where the conditions of absorption and occlusion will permit their use, and is undoubtedly the ideal form of artificial substitute. Backings for these teeth may be made in sections involving the number of dum-

mies between the attachments, which should never exceed three, possibly four, but better form, larger and therefore more hygienic interproximal spaces, and less display of gold, are to be obtained by making each backing separately.

As a means of preserving the proper relation of the short sustaining post which holds the tooth to the backing, and of insuring a smoother surface adaptation of the backing to the porcelain than the ordinary casting investment materials afford, in using this type of "dummy" a thin backing of about 38 gauge, pure gold, should be previously swaged or burnished to the tooth, and the post soldered to it. It is then always necessary to allow as much surplus end of the post as possible to extend beyond, in order to insure strength in the final attachment of this essential part of the completed backing.

Casting wax may then be molded to the required form, and the casting made directly upon and against the thin gold backing, by which method any distortion or possible misfit due to shrinkage or warpage is overcome, and the most finished, accurate and reliable results are insured.

In the use of this type of tooth in all cases in the upper arch, where complete absorption has already taken place, the most sanitary form of structure is usually to be obtained by molding the wax so as to restore or approximately follow the lingual form of the tooth, by tapering down to a narrow saddle at the point of contact with the soft tissues. As a rule, and contrary to the opinions of some, however, wherever the adaptation is good, such a type of construction will be found to be far more sanitary than the usual recesses, shelves and pockets so common in the ordinary methods.

In this more or less typical fixture it will be observed that practically no gold is displayed anterior to the second molar, and yet that a maximum of strength presents throughout.

In cases where complete absorption has not occurred a saddle is, of course, contra-indicated, but in these cases the neck of the porcelain tooth should accurately fit and bear *firmly* upon the soft tissue, and the lingual surface of the backing should then be so formed as to be as nearly convex or self-cleaning as possible.

For those cases in the anterior region where abnormalities of occlusion or elongation of the opposing natural teeth demand a thin facing, the ordinary type of long pin facing may be used. In its use, however, the best results are to be

obtained by previously backing it up with thin pure gold, adding wax to this to the desired form, removing the facing, placing graphite points in the holes which receive the pins, and casting. The pins may then be threaded with the Bryant tap and, when the backings have been assembled with solder, the facings may be cemented to position, thus obtaining all of the previously mentioned advantages of cementation combined with better form and uniform strength.

In addition to these, for those cases particularly in the lower arch, and in exceedingly "close-bited" cases where cosmetics is not a factor, or where the extent of absorption or the elongation of opposing teeth precludes the use of porcelain in any form, the all gold cast dummy may be used. Such dummies may be made to conform to the requirements of occlusion, adaptation, in wax, and then invested and cast in one piece. This type of "dummy" is useful in supplying the lower second bicuspid and first and second molars, and may include only the occlusal surface, thus forming the so-called "self-cleansing" type of bridge, or the entire tooth with or without a saddle, as the requirements may be. The former type of construction is indicated only where there is an excessive degree of absorption, which will permit of sufficient space between the gums and occlusal surface to insure self-cleansing properties, and wherever this space is not great enough *to be easily kept clean*, direct contact with the gum will afford a more hygienic result. In other words, there should be plenty of space, or none at all.

The remaining feature incident to the construction of all forms of fixed bridgework involves only the proper assemblage of the various parts. While some are casting all attachments and backings with an alloy of five per cent. of platinum and pure gold, thus using no "solder" whatever, still a good grade of 22 karat gold or coin gold, may be used with equally good results. When either of the latter is used, the final assemblage may be affected with 22 karat solder, *and providing there is absolute contact between all of the parts to be united* the procedure is thus somewhat facilitated and the results are uniformly good.

#### REMOVABLE BRIDGEWORK.

The same general ideas are also applicable to the construction of removable fixtures.

For this class of work, also, three general types of anchorage to the supporting teeth or roots will be found to adequately meet the requirements of the average case. These

embrace "clasps," the "telescoping tube and split post," and the various forms of manufactured attachments.

Wide clasps encompassing three angles of the tooth, provided with an occlusal rest, not cast, but made of heavy rolled clasp metal alloy, probably afford the very best means of obtaining anchorage to the natural or artificial crowns of bicuspid and molars.

That clasps should not be cast is especially emphasized, because the molecular rearrangement resulting from casting most of our present alloys destroys to a greater or less extent the very qualities of strength and resilience demanded of them, and which undoubtedly obtain best in a rolled or drawn metal or alloy.

In all forms of removable bridgework or partial dentures, where clasps are used, however, some form of occlusal rest is necessary as a means of providing against subsequent settlement of the case.

If this precaution is not observed, complete loss of occlusion and usefulness will soon follow.

The telescoping tube and split post attachment is useful when confined to the *roots of the six anterior teeth*.

The Roach, Morgan, and other types of manufactured attachments will also be found valuable when used in connection with either porcelain or gold crowns or inlays on the cuspids and bicuspid, and the Morgan attachment is particularly useful on cuspid and bicuspid where no teeth posterior to the one carrying the attachment remains.

In addition to these I call your attention also to a most useful method of attachment which is more or less universally applicable, the one now known as Gilmore's.

This consists in utilizing the grasping principle of an open tube with straight and parallel sides, which is the removable part of the fixture, in combination with a round wire, of about 12 gauge, attached to and therefore a part of the "fixed" portion of the structure, but lying in a horizontal position instead of in a vertical one, in its relation to the supporting fixture.

It is easily applied, easily tightened when loosened by wear, takes up but little space, does not require absolute parallelism when more than one is used on the same fixture, and is applicable alike to either gold or vulcanite work.

When the type or types of attachment thought to be best indicated have been selected, adapted and completed, the casting process then offers splendid opportunity and great



possibilities for the subsequent formation of the body of the fixture, and in this connection I believe that the successful casting of large pieces or of bases of any size, is but a question of the development of proper technic on our part.

#### CARE OF BRIDGEWORK.

The proper care of dental bridgework is often, and indeed usually, wantonly neglected by the patient. The dentist, however, is largely responsible for failure to observe the same degree of hygiene in the mouth in which either fixed or removable structures are wanted, that is and should be observed in the mouths of those who are so fortunate as to possess a full complement of good natural teeth. To this end the dentist should properly instruct the patient as to the necessity for, and the best means of, keeping the mouth and work in a healthy sanitary condition as an unfailing practice and a religious duty.

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### *Our Letter from Buffalo.*

BY HABEC.

BY REQUEST.

**T**HE number we are about to "render by request" is neither "Dolly Gray" or "Silver Threads Among the Gold," but just an autumn invoice of our old line of compressed air, served hot or cold, to suit the taste. As the matter stands, Dr. Wallace Seccombe is the "requester," so vent your spite upon this "Little Nemo" of expansive chest measure and profound thoracic displacement and not upon poor, old Habec, whose sins are only those of commission. But just to convince you that we possess a sadly undeveloped streak of seriousness, permit us to confess that we are rather glad that your editor broke in upon our Rip Van Winkle snooze and that "Me and Fido" are back among you once again. The truth is that our duramater had of late become so inflated with carbonated conversation that it was swelled up like a poisoned pig. We are sure you all have enjoyed a restful and satisfactory vacation and now are deep into the never-ending fight with our mutual enemy, Mike Robe. However, we enjoy the struggle, for humanity's sake, not to mention the good wife and the kiddies.

But the summer which has but recently passed into history, was not lacking in interest dentally. Buffalo showed up on the map for a busy week when it entertained the

FOURTH INTERNATIONAL CONGRESS ON SCHOOL HYGIENE.

There were all kinds of doings by all kinds of people and in all kinds of languages. It rather resembled a dish of Heintz chow-chow with mixed pickles on the side. And there was plenty of mustard sauce, too. Some of those dark-skinned fire-eaters, whose steady job is to hold the equator in place, came up north properly loaded with red pepper sauce and they weren't stingy with it, either. In consequence Buffalo sissed like a red-hot flapjack griddle the whole week.

A three ringed circus was slower than a churchyard on a busy day, compared to the midway stunts going on during that week. An average of more than forty papers a day was the record, with more than a dozen different sections in session at the same time. There will be five good-sized volumns required to contain the proceedings. Two features, however, stood out prominently among all others which are of interest to us, namely, sex hygiene and mouth hygiene. Sex hygiene was handled without gloves, and the truth didn't have even a fig leaf to save the imagination. Good old Pater Elliott, who for years guided the destiny of Harvard and who is looked upon as one of our greatest educators, came into town with several large trunks loaded with plain language and took them away filled with the emptiest kind of emptiness. Everybody had to take some of it whether or no, and poor little cupid tried to hide behind his bow for the shame of it. Plain talks for plain people are all right, but Bill Sulzer, who can now write "Ex" before his name, was always strong on the plain stuff. For this reason he is now a plain citizen.

We are strong for sex hygiene properly taught, but this "September Morn," megaphone style, is too pronounced for the present. However, the work is of vital importance to the human race and under intelligent guidance may rid the problem of many of the evils that have surrounded this subject up to the present time. The highest sense of intelligence, culture, spirituality, manliness and womanliness must be combined to adequately deal with the problem, and only such persons as embody these qualities should be permitted to unfold nature's mysteries to the young. Well, we will sit on the fence and see what happens, and in the meantime we will, as dentists, plunge into the world wide work of Mouth Hygiene.

This feature of the congress was well taken care of and the subject matter was such as would be most educational

to the public at large. Dr. Brown, of Columbus, Ohio, President of the N. D. A., was on deck to lend his gracious presence to the cause. Dr. Kirk gave a talk and Dr. Fones, of Bridgeport, Conn., speilel about the dental nurse. By the way, he is instituting a school of training for the "dental nurse," the course covering several months of lectures to be followed by six months of practical experience. His staff will include about twenty lecturers, and the doctor recently told Habec that he expected to demonstrate the practicability of, and necessity for, the dental nurse. He figures that the experiment will cost him about three thousand dollars above all revenue from tuition. This scheme will, at least, settle the mooted question one way or the other and give the profession some tangible basis upon which to work.

The really big show of the mouth hygiene section was pulled off by the enthusiastic secretary-treasurer of the National Mouth Hygiene Association, Dr. Ebersole, of Cleveland. There was some class to the manner of his stunts. He brought along a baker's dozen of the "mental deficiency" class of twenty-seven from the Marion School of Cleveland, and featured Miss O'Neil, principle of the school, as the speaker of the evening. And she wasn't half bad. She lined up the twelve experiments and when called upon by name, Johnny Jones or Tillie Smith would respectively bob up, courtesy and sit down. It really was quite entertaining. The children looked alright from a distance and no doubt they were good representatives of the twenty-seven. Dr. Ebersole has the right idea about a good show. It must be entertaining, so he threw the pictures of "before" and "after" of each "experiment" on the screen. Miss O'Neil elaborated upon each one and the audience seemed much impressed by the astonishing results. Well, we are glad it happened, anyway, for the "ends justify the means," and it is the education of the public that we are after. The mouth exhibits were excellent and numerous. Exhibits were sent from all over the U. S. and from Canada. The New York State Health Department had an unusually instructive display on mouth hygiene in charge of Dr. W. A. White, dental member of that department, which created a great deal of interest and served as a medium for the distribution of thousands of booklets on the care of the mouth and teeth. Dr. Porter, head of our State Health Department, is doing all he can to further this work, is anxious to have New York State lead the union in mouth hygiene. During the past year Dr. White has lectured to more than seventy thousand

persons from one end of the state to the other. It is the purpose of the President of the New York State Dental Society, Dr. W. W. Smith, to make mouth hygiene the main issue of his administration. Habec has the honor of being a member of this committee, and he is pleased to acknowledge that he has never undertaken a more satisfactory office nor one in which his interest was more deeply centred, the only regret being a lack of adequate time to do all his ambitions dictate. It is the grandest work before our profession to-day and every mothers' son of us should teach it, act it and live it. Everything considered, our part in the congress was well carried out and much good will come of it.

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### *Opening of New College at Laval.*

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THE Laval Dental College, the official title of which is *Ecole de Chirurgie Dentaire De Montreal*, situated at the corner of Demontigny and St. Hubert Streets, Montreal, was officially opened on Tuesday evening, October 14th, 1913, by His Grace, Archbishop Bruchesi, in the presence of a number of guests and delegates from different colleges of the Province, and a special delegate from the Dental Association of France.

The edifice, of brick and stone, cost \$150,000, while \$40,000 more has been spent on equipment.

Speeches were made by Dr. Kern, the delegate from France; Canon G. Dauth, vice rector of Laval; Dr. E. Dubeau, president of the Laval Dental School; and Dr. Lanthier, president of the Dental Association of the Province.

The blessing of the building was performed by Archbishop Bruchesi, who congratulated the university on its fine new school. Sir Francois Langelier, Lieutenant-Governor of Quebec; Sir Lomer Gouin, Provincial Prime Minister, and Ch. E. Bonin, French Consul-General at Montreal, expressed their gratification at seeing another building devoted to higher education in Montreal.

The congratulations and best wishes of the entire dental profession are due the Laval College and also Dean Dubeau and his loyal staff for the enterprise and sacrifice which has marked the progress of Laval Dental College.



## ***Cleanliness and Asepsis.***

BY R. G. McLAUGHLIN, D.D.S., TORONTO.

**T**O-DAY, when our Government, through the various Departments of Health, is spending so many thousands in money, and giving so much earnest thought to the prevention of disease, the serious question arises, how many dentists in the Province of Ontario are so conducting their practices at this moment, as to be a hindrance to this great movement.

No doubt it can be said in all truth that the vast majority of the dental profession in recent years have risen to the importance of cleanliness and asepsis in all operations. However, through recent inquiry and observation we are led to believe that many are still lacking in this essential.

The dentist of to-day may be clever, brilliant and a technical expert, but if he is lacking in this one thing he must be counted a failure, and a dangerous failure. He fails because his curse to the community in the spread of disease will prove a greater calamity than any benefits conferred by his technical skill.

The writer has had occasion to visit one or two of these offices recently and what came under his observation has given rise to serious reflection. One office in a fairly good locality—reception room, operating room and laboratory all in one. The dirty laboratory bench and vulcanizing outfit within easy reach of the patient in the chair. The floor dirty, instruments scattered in confusion over the stand, while no apparent attempt had been made to cleanse them before the arrival of the next patient. (We were devoutly thankful not to be that next.) In a word the whole office atmosphere was one of carelessness and neglect, and as we took our departure we felt like writing in large capitals in some conspicuous place the words, "Thou shalt not kill." When such an office can be found in active operation in our midst presided over by a comparatively recent graduate, the question arises, how many similar ones are to be found in all Ontario?

Should the Board of Directors exercise such supervision and jurisdiction over the graduates of our college as to compel them to practice *clean dentistry*.

One of our by-laws says in effect that if a dentist is a moral menace to the community he is guilty of a professional misdemeanor and liable to have his license suspended or cancelled. Is not the man who is unclean in his practice as much a menace to the community, just as great a criminal, and a disgrace to the profession.

Should the Provincial Officer of Health visit a few such offices as I have described, the dental profession might be subjected to a humiliation much greater and more real than that caused by the recent Dr. Hunter episode.

It might be well if the Board of Directors through its Discipline Committee could exercise some legal oversight in such matters. But in the meantime might it not be productive of much good if a yearly bulletin were issued to the whole profession calling attention to such matters and giving adequate directions and advice?

Such a pamphlet would find many a mark, specially among those who persistently stay away from all society gatherings.

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### *Teeth and Taxes.*

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BY M. EVANGELINE JORDAN, D.D.S., LOS ANGELES, CAL.

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**T**HE neglect of children's teeth is increasing the taxes of the United States many millions of dollars each year.

Dr. Ebersole, the Chairman of the National Committee on Oral Hygiene, tells us that in the city of Cleveland 97% of the school children need dental care for their teeth. He says that these children take one-fifth longer to get through school, that is, when their mouths are put into a healthy condition they can do 20% more work. It is estimated that this is an annual loss to the tax-payers of Cleveland of half a million dollars. Cleveland is only one city in the United States, and conditions are similar in all communities.

This is only one way in which neglected teeth increase taxes. The cost of caring for young criminals might be greatly lessened by keeping the mouths of poor children in a healthy condition. We should then have fewer young criminals, because workers in Juvenile Courts find decayed teeth one of the predisposing causes of viciousness and delinquency. Often these children become honest and upright when their mouths are made healthy. A step farther

and the cost of maintaining prisons, courts and penitentiaries would be lessened if there were fewer criminals growing up to fill them.

Hospitals are a great expense. Those who work in clinics for tuberculous children tell us that such children always have decayed teeth. Go into any hospital and examine the mouths of the inmates and you will be satisfied that if their teeth had been kept in repair many of them would not need to be there.

Another heavy item of expense to the taxpayer is asylums for the insane, which each year are being more crowded. Some of these unhappy people would be well and self-supporting if their teeth had been cared for, but now they are a tax upon the people.

And last but saddest of all, when old age is reached many people must be cared for by the State, because they were unsuccessful in life. One-fifth of their strength was wasted by neglected teeth.

This is needless waste and is largely due to the fact that people think because the deciduous or baby teeth are to be shed that they need no care. Nothing was ever farther from the truth. These teeth are needed for use between the age of two and twelve, and under our present state of civilization every dollar spent in keeping the mouth in perfect health from the age of five to fifteen brings returns in health and strength than three dollars later on.

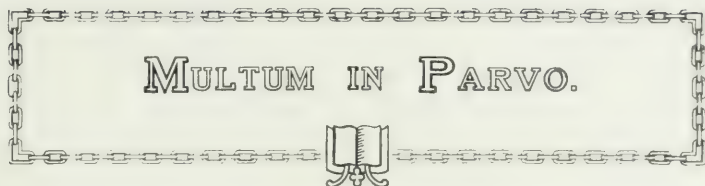
The reasons for this are plain: 1st. Teeth are more liable to decay under puberty. 2nd. The child is making more rapid growth in body and mind during these ten years than at any other period of its life, therefore any interference with the health is most serious. 3rd. The child is not able to resist disease unless in perfect health. 4th. When the mouth is unhealthy the decayed teeth are ideal breeding spots for the disease germs which later are distributed over the body.

Decay of the teeth, which is properly called caries of the teeth, may be *prevented*, but cannot be *cured*. Once a hole is made in a tooth it can only be patched with a filling or a crown.

By beginning to care for the teeth in the right way as soon as they appear one may have a perfect set of permanent teeth for his whole life.

Are the taxpayers willing to continue paying these needless millions or will they take measures for prevention.

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Librarian, Royal College of Dental Surgeons of Ontario

*Helpful Practical Suggestions for publication, sent in by members  
of the Profession, will be greatly appreciated by this Department.*

CLEANING RUBBER FILES.—Files used in the laboratory for finishing vulcanite work soon become clogged by the rubber wedging in the depressions between the teeth. Pouring chloroform over the file causes the rubber to curl up and loosen, so that it can be readily removed by any kind of a brush, thereby making the file cut like a new one.—*W. H. Craft, Dental Brief.*

DRYING OUT ROOT CANALS.—Old hypodermic needles will be found useful to screw on the end of the chip-blower for drying out root-canals, as the heat can be applied nearer to the apex of the root-canal. Generally, part of the point should be broken off before using.—*Dental Digest.*

THE NEED OF OCCLUSAL RESTS.—In all forms of removable bridge-work, or partial dentures, where clasps are used, some form of occlusal rest is necessary as a means of providing against subsequent settlement of the case. If this precaution is not observed, complete loss of occlusion and usefulness will soon follow.—*Hart J. Goslee, Dental Review.*

POURING LIQUIDS. To pour a liquid into a narrow-mouthed bottle, when a funnel is not at hand, a match-stem or wooden toothpick is moistened and laid across the top, holding it there with the forefinger. When poured, the liquid will run along the bit of wood into the bottle. A fountain pen may be filled in this manner. Chemists have a little trick for pouring liquid into a paper filter. Filter paper is not strong, and is apt to break unless used with care. To avoid accidents, the chemist holds a glass rod touching the side of the filter and the tip of the vessel from which the liquid is poured. In this way the liquids conveyed to the filter in a gentle stream and without impact.—*Dental Brief.*



## PERSONAL PAGE



**D**R. BIEHN, of Chesley, Ont., has given up the practice of dentistry, having disposed of his practice to Dr. A. E. Henderson, formerly of Toronto and Winnipeg.

The examination of the British Columbia Dental Board will be held in Vancouver the second Monday of November.

Dr. Harris, of Southampton, Ont., was unfortunate enough to receive a very painful cut while at work in the office. For some little time blood poisoning was threatened, but the profession will be glad to know that Dr. Harris is quite well again and able to resume his practice.

Dr. J. Milton Jones, of Vancouver, B.C., has been visiting his old friends in Hamilton and Toronto.

Dr. H. LeRoy Burgess is now located in his new office in the Campbell Bldg., Victoria.

Dr. R. Caldwell, of Vancouver, B.C., is locating in the new Birks Bldg., about the 1st of November.

Dr. W. B. Halladay, of Walkerton, Ont., has returned from a trip to the coast after spending a very pleasant month's vacation.

Dr. Edwin S. Barber, of Chicago, concluded a course on "Analgesia and Dental Economics" in the city of Vancouver during September. The members of the class were so pleased with the results of the course that other classes are being organized in Vancouver and Victoria during January. ORAL HEALTH understands that Dr. Barber has been invited to give his course in Winnipeg and Toronto early in the new year. This will, no doubt, meet with the approval of the dentists of these cities and prove the success that Dr. Barber attains wherever he has given his course.

Dr. J. W. Armstrong, of Toronto, recently returned from a very pleasant vacation spent in touring Western Canada.

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## EDITORIAL.

### *The Century Mark at R. C. D. S.*

THE dental profession in Canada and the Royal College of Dental Surgeons of Ontario are to be congratulated upon the registration this year of one hundred freshmen in the School of Dentistry, Toronto. Information is not at hand showing the registration of freshmen in the other Canadian Dental Colleges, but it is to be hoped that a similar increase will be shown in the other colleges as has occurred at Toronto.

Registration in the R. C. D. S. in the several years, with year of graduation, is as follows:

Class	Number	Year of Graduation
Freshman . . . . .	100	1917
Sophomore . . . . .	61	1916
Junior . . . . .	61	1915
Senior . . . . .	56	1914

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The rapid development of Canada and the yearly arrival of half a million immigrants makes it absolutely necessary for the R. C. D. S. to maintain a one hundred class standard. The college should organize now to receive annually, until

the need for dentists be met, at least one hundred freshmen so that commencing with the year 1917 this college will graduate one hundred men to take their place in the ranks of the profession.

The excellent registration at the R. C. D. S. may be accounted for in different ways, but back of everything else has been the splendid and loyal support given the college by the rank and file of the dental profession. The response of the profession to the need for more dentists, as expressed frequently during the past year in *ORAL HEALTH*, is most gratifying as showing the active interest taken by dentists in every movement for the good of the dental profession and in the interest of public health.

The R. C. D. S. is unique among dental colleges in that it is owned and controlled by the dental profession itself. Great things are possible of accomplishment for dentistry, and particularly preventive dentistry in such an institution, financially fit and conducted by the dental profession solely in the interest of science and education and for the maintenance of proper dental standards.

There are those who rejoice in dentistry because of the vision they have of larger and better and greater things for the profession of the future. May we all share that vision and work for its realization.

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### *What is the Best Date?*

**E**NQUIRIES have reached *ORAL HEALTH* regarding the date of the Canadian Dental Association Convention to be held in Winnipeg next year, and the suggestion made that the date be fixed some time during July or August. It is possible that an earlier date would be more convenient for some sections of Canada, but the general advantage of holding the convention during the tourist season would more than offset any possible disadvantage incident to a midsummer month.

In holding a national convention in a country whose population is as widely distributed as is Canada's, it is absolutely necessary to arrange such a date that members from a distance can afford to take the time to attend. To a Maritime Province man attendance at Winnipeg will mean absence from the office for about three weeks. Can the average practitioner arrange to take three weeks off, unless it be during the summer months? Will the average Ontario den-

tist spend two weeks attending a convention immediately previous to the summer vacation?

These are questions which the committee will no doubt consider carefully. It has been said that a date in May is under consideration, but before finally deciding the committee would do well to make a thorough canvas of the situation. The date of a convention considered from the standpoint of attendance frequently spells either success or failure.

The organization of the profession in Canada for the advancement of scientific research, will, no doubt, mark the coming meeting as being more important than an ordinary convention, and whatever the date, it is to be hoped that members of the profession will attend in large and representative numbers.

### ***Toronto Dental Society.***

THE next meeting of the Toronto Dental Society will be of special interest. Dr. E. C. Kirk, Dean Dental Department, University of Pennsylvania and Editor of the *Dental Cosmos*, will present a paper upon the subject of "The Relation of Diet to Dental Oral Lesions."

The meeting will be held in the Walker House Annex on Saturday, November 29th, 1913, at 6.15 p.m.

Discussion upon the paper will be opened by Dr. Harold Clark of Toronto.

### ***Ontario Oral Hygiene Convention.***

A CONVENTION of the Oral Hygiene Committee of the Ontario Dental Society will be held in the city of Toronto on 19th November, 1913. Members will meet at the Dental College Building after lunch and will be taken in automobiles on a tour of inspection of the school and civic clinics of the city.

A dinner meeting will be held in the evening about 6.30. Programme will follow:

Chairman's Address—Dr. W. Cecil Trotter, Toronto.

Examination Charts—Dr. R. G. McLaughlin, Toronto.

How to Introduce and Carry on Oral Hygiene Campaign in Rural Districts—Dr. D. M. Foster, Guelph.

Any dentist interested will be welcome at the sessions of the convention. Those planning to attend should notify Dr. R. J. Reade, Secretary, 2 Bloor Street W., Toronto, that ample provision may be made.



### ***Oral Hygiene Reports.***

#### *Atlantic City, N.J.*

The oral hygiene movement, relating to the prevention of disease through unhealthy mouth conditions and the prevention of tooth decay, is now world-wide. The municipal authorities, health and educational, in many cities throughout the country, have taken cognizance of it, and many free dental clinics have been established. Newark has what are regarded as two model free dental clinics, with paid operators and nurses in charge. That they are largely patronized, and that the work done is appreciated by the authorities, is attested by the fact that the city now appropriates annually \$10,000 for this purpose.

#### *Cleveland, Ohio.*

The record of Mason School shows a class of 27 children, where retards and repeaters were given dental treatment to demonstrate that the correction of dental defects and insanitary mouths would improve their mentality; at the end of the experimental year only one of the pupils failed for promotion. Thus attendance was improved owing to improved health, and their mentality showed an improvement, on an average, of 50 per cent.

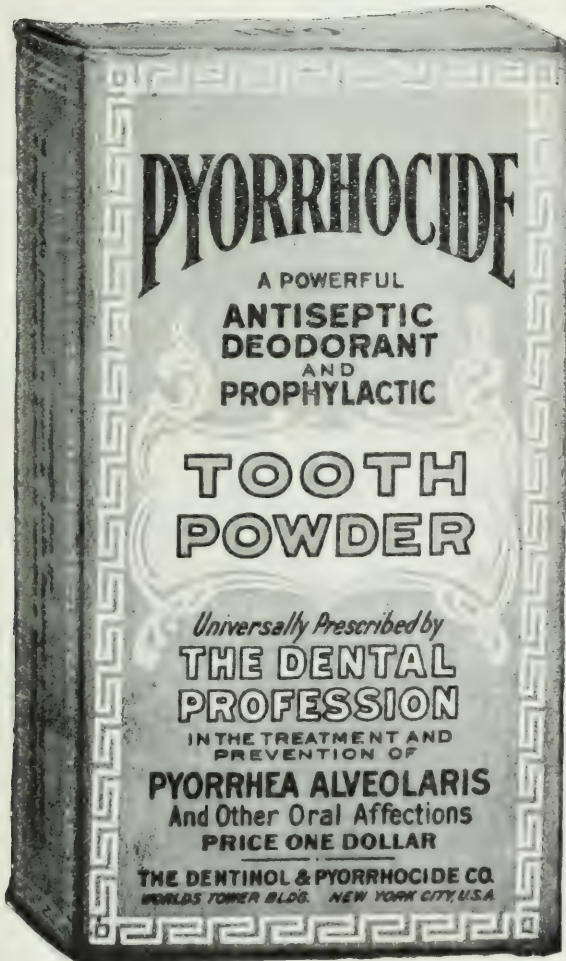
#### *Cincinnati.*

The record of a Cincinnati school shows a class of fifth-grade pupils in which there were six or seven "left overs," and an equal number having marks as "good" and "medium." The teeth of all were cleaned, all cavities filled and the necessary extractions performed. The results show that attendance was improved, the scholarship was improved, on an average of 16.2 per cent., and their general physical appearance was improved over a similar class in same grade and same school.

#### *Dresden.*

Statistics collected by the Bureau of Dental Hygiene show conclusively that (1) on account of bad teeth the physical development of the child is seriously retarded; (2) the more physical development is disturbed the less in general is the mental capacity of the child; (3) the worse the teeth the worse, as a rule, is the school standing and advancement of the child.

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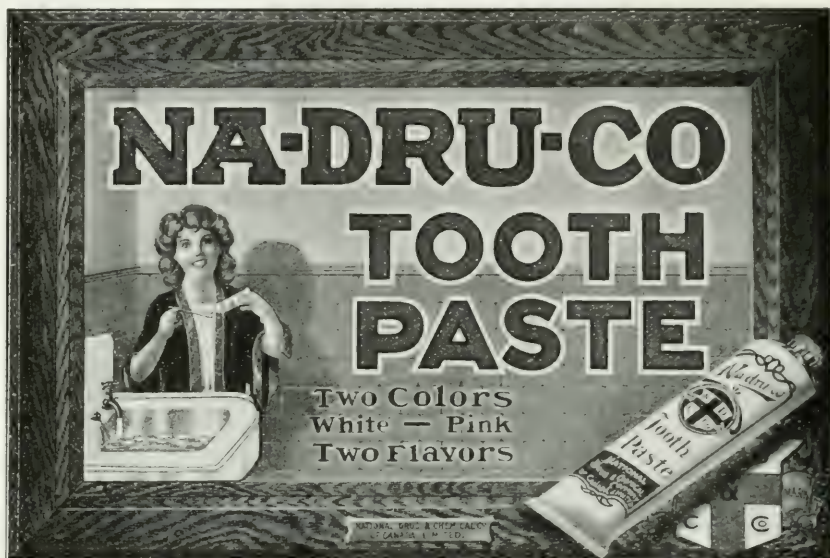
**THE WINGATE CHEMICAL Co., Ltd.**  
**MONTREAL**

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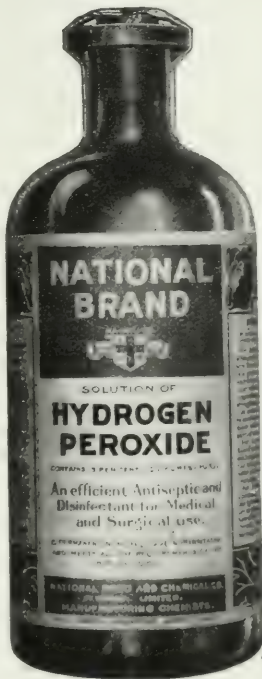
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a fat steer I could  
not pass from one State to another  
without being examined to ascertain if I were  
in good health, but being only a fat  
man I can go anywhere  
unmolested.—

*Wiley*





HENRY PERCY PICKERILL, M.D., Ch. B., M.D.S. (Birm.)  
L.D.S., R.C.S. (Eng.)

Professor and Director, Dental School, University of Otago,  
New Zealand, and Editor New Zealand Dental Journal.

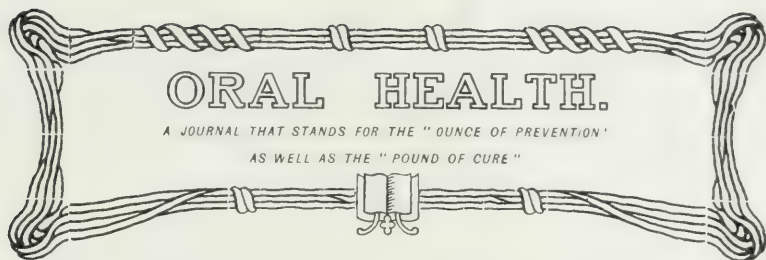
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Dr. Pickerill received his early training in Hereford County College and the Universities of Birmingham and Oxford. He was articled as a Dental student from 1896 to 1900 and entered Birmingham University as a dental and medical student in 1900, receiving his L.D.S. in 1903 and Bachelor Dental Surgery, University of Birmingham in 1904. In the following year he received the degree of Bachelor of Medicine and Surgery.

Before taking up work in New Zealand he was Demonstrator in the Birmingham Dental Hospital and Assistant Surgeon and Lecturer on Dental Histology and Pathology in the University of Birmingham.

Dr. Pickerill has published a number of scientific articles but by far the greatest interest, however, from the dental standpoint, is centred in Dr. Pickerill's recent book, "The Prevention of Dental Caries and Oral Sepsis." This work was awarded the Cartwright Prize in 1911 and is of the greatest practical value to the profession having regard to the general progress of Preventive Dentistry.

Dr. Pickerill is fond of out-of-door life and takes the keenest delight in fishing, boating and photography.



**VOL. 3.      TORONTO, DECEMBER, 1913      No. 12**

## ***Professor Gysi's System of Anatomical Articulation.***

*(Continued from November issue)*

BY W. E. CUMMER, L.D.S., D.D.S.

Professor Prosthetic Dentistry, Royal College of Dental Surgeons Toronto.



Dr. W. E. Cummer

### **APPARATUS.**

The apparatus, which at first glance may seem complex, is in reality simple and effective for the functions for which it is designed. It comprises an articulator (Fig. 26), instruments for recording the various movements of the jaw, and a stand for holding the measuring instruments in position on the articulator while models are being placed.

Above will be found cut of various parts. Parts 1, 1A, 2, 2A, 3, when assembled, form the articulator as seen on Fig. 27A. The functions of the other parts may be seen in subsequent cuts.

### **PROCEDURE IN BRIEF, FULL UPPER AND LOWER.**

Impressions and casts are made and the base plates formed upon them. Wax base plates, unless of hard wax and well stiffened with metal strip melted in, are not desirable. Shellac or impression compound bases may be used, or, better, a separate base of vulcanite upon which the teeth

are vulcanized after the double vulcanization method described by Dr. Geo. H. Wilson in his text, or, better still, in most cases the metallic base of gold, platinum or aluminum. No filing or trimming of the base should be necessary after the technique for impressions already described. These hav-

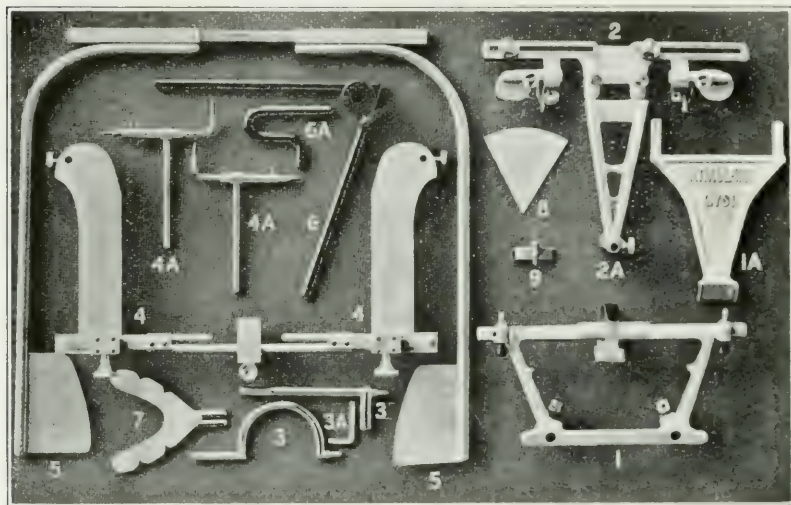


Fig. 27—The Parts of the Gysi Articulator.

Nos. 1, 2—Upper and lower parts of articulator frame which carry the upper and lower model bows.

Nos. 1A and 2A—Upper and lower model bows.

Nos. 3, 3A—Straight incisor guide pin and curved incisor guide pin. The curved pin is used only when mounting models or setting anteroposteriors.

No. 3A—Small pin for all set screws.

Nos. 4, 4A—Framework for condyle path register.

Nos. 4A, 4A—Pened buffers and pencils of condyle path register.

Nos. 5, 5—Lateral path register.

No. 6, 6A—Stator and gooseneck for holding inactive path register and models.

No. 7—Horseshoe plate.

No. 8—Degree plate for measuring inclinations of paths, or protractor.

No. 9—Incisor path register.

ing been constructed, wax is built down on the upper to the occlusal plane (Fig. 28), building out the facial contour in the usual manner. The lower surface of the upper trial plate is then laid on a piece of coarse sandpaper and given a circular motion for a moment or two, giving a perfectly flat surface. It is then chilled and oiled on its lower surface.

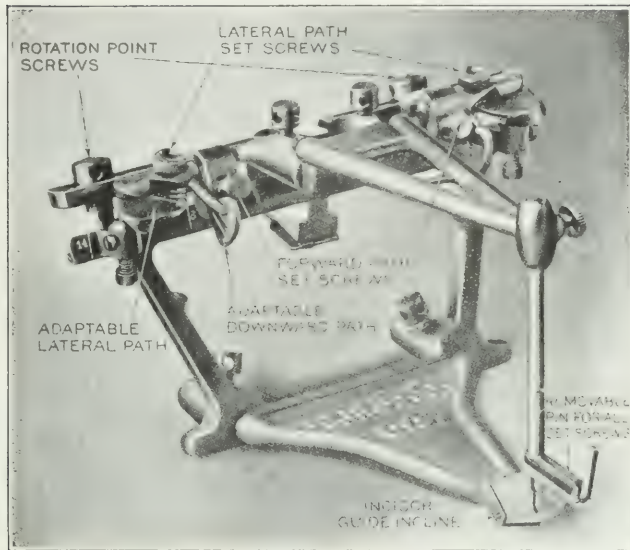


Fig. 27a. Incisor Guide incline set at 40°. The Gysi Articulator without measuring instruments.



Fig. 30

A method of securing the real bite, used by Professor Gysi and described above.



The lower trial plate is then built up in wax and the patient instructed to close in the position of the rest bite (Fig. 29). Professor Gysi's method of securing the rest bite is having the patient separate the jaws, and while the lower is depressed a backward pressure is exerted by the angle between the thumb and forefinger, instructing the patient to close. This is repeated until the result is secured as shown in the illustration Fig. 30.



Fig. 28

The occlusal plane is parallel to line drawn from the opening of the ear to root of nose, and extends backward from a point 2mm. below the lip in repose.

Clapp, Mechanical Side Anatomical Articulation

At this point care must be taken to see that the trial plates are in uniform contact all the way around. This may be readily ascertained if the patient is instructed to close, and a thin instrument, such as a cement spatula, is inserted between the plates against this pressure, non-uniform con-

tact being revealed by separation. Also the rims must be the same width all round, as shown, otherwise an uneven pressure may arise (Fig. 31). Should uneven pressure be discovered the trial plates may be softened on their surface by thoroughly warming the entire surface by thrusting a warm spatula in (Fig. 32), then quickly insert, having patient close immediately. This presses down the softened high spots and equalizes the pressure. This is most im-

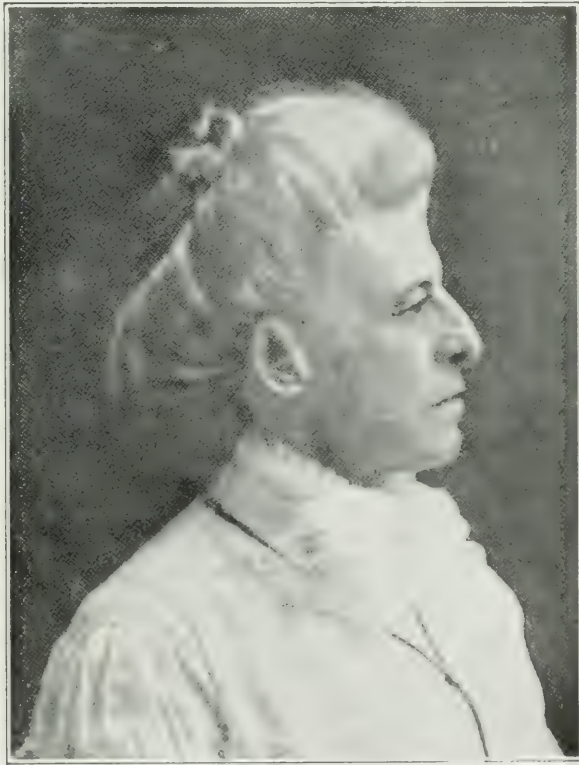


Fig. 29

With baseplates built out to proper faecal contour. Note difference in expression.

Clapp, Mechanical Side of Anatomical Articulation

portant, and if the step is not correctly done all subsequent technique will be valueless. This having been done, the appearance of the patient should have altered similar to Fig. 29. The high lip line, median line and angle of mouth are next marked. These steps complete the construction of the trial plates.

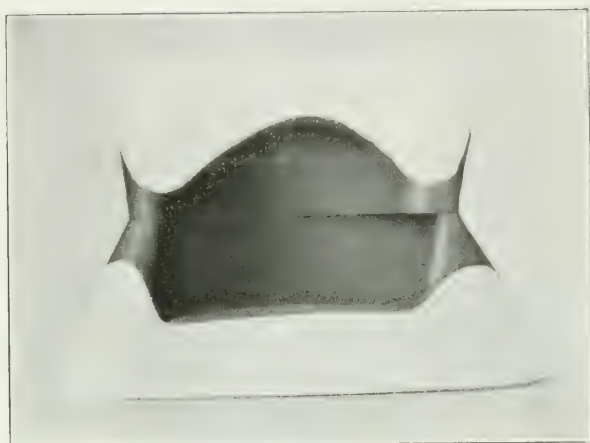


Fig. 31

Unequal pressure leads to *inc. curvy* : may be produced by bearing surfaces of different width of the trial plates.

Hand Book, Gysi Articulator



Fig. 32

Softening surface of trial plates by warm wax spatula. This is thrust in repeatedly until the wax is thoroughly plastic under its entire surface for at least  $\frac{1}{2}$  inch.

Hand Book Gysi Articulator

# RECORDING MOVEMENTS OF MANDIBLE.

The first step in making the records is the insertion of the horse-shoe plate, which carries the measuring instruments. This, as its name indicates (No. 7, Fig. 27), is a flat horse-shoe shaped piece of brass with sharp needle-like projections upon its lower surface which are pressed into the upper surface of the lower trial plate, and with two parallel rods which carry the recording instrument. This having been inserted in the lower trial plate, the upper is softened with a spatula upon its lower surface (Fig. 32), the horse-shoe plate is slightly oiled, and the patient instructed to close. This will sink a depression in the upper trial plate the thickness of the horse-shoe plate, as shown in Fig. 33. The festoons (Right-hand cut, Fig. 33) are now trimmed away on the upper, permitting a free sliding movement in the mouth of the trial plates, one upon the other.

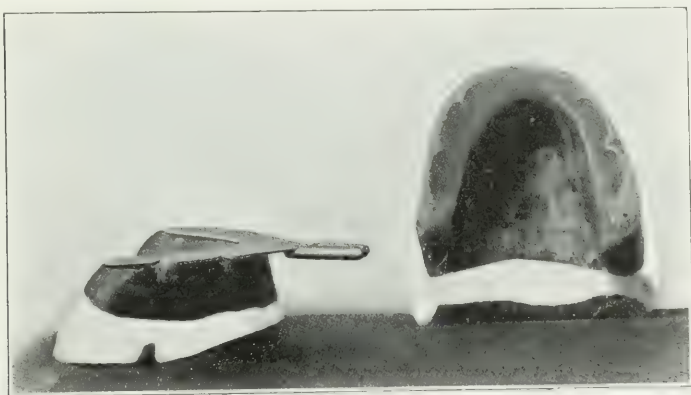


Fig. 33.

Pressing back wax in upper to allow for necessary thickness of Horse-shoe plate, which carries the instrument which registers the condyle path, lateral inclination path, and itself carries the registry, which determines the position of the rotation points.

Hand Book, Gysi Articulator

## RECORD NO. 1—LATERAL MOVEMENT.

As a matter of convenience the record of the lateral movement is made first. The registering instrument is slipped on the horse shoe plate on the lower trial plate with the lead pencils in position opposite the condyle, as shown in Fig. 34. The condyle may be located one-half inch ahead of the tragus of the ear, as in Fig. 35. This having been accomplished, the lateral path register bearing the ground glass plates is adjusted for the width of the head, and balanced



between the middle finger and index finger, is applied to the head, with the middle finger resting on the head as in Fig. 34. A slight side movement is given to the glass plates to mark the starting point of the inward movement of the condyles, and then the patient is instructed to make side movements. The pencils then trace the forward and inward movements of the condyle (Fig. 36), the starting points of which are joined, perpendicular erected, and the angles measured as in Fig. 37. The variation of these in different patients may be seen in Fig. 38, and entry made in records, forms of which are shown. (Figs. 38 and 42A.) A few typical records are shown. (Fig. 42.)



Fig. 34

Shows Dr. Gysi with the Lateral Path Register held about his head. The vertical pencils have traced paths on the ground glass. The paths have been strengthened that they may be more easily seen. Note that the weight of the Register is carried by the middle finger resting on the head, and that it is balanced there, the necessary pressure down against the pencils being given with thumb and first finger.

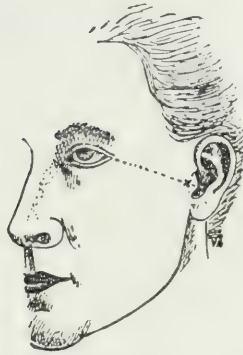


Fig. 35

Condyle at rest may usually be found in a line between the canthus of the eye and the tragus of the ear and  $\frac{1}{2}$ -inch forward of the latter.

Gysi, Cosmos, 1910



Fig. 36

Shows lateral condyle paths recorded and strengthened. Lines drawn from "resting point" in one path to "resting point" in the other, and perpendiculars erected at these points. Angles may be measured with the little plate used for measuring forward paths as shown in Fig. 37.

Hand Book Gysi Articulator

## CONDYLE PATH REGISTER.

This having been completed the pencils are swung around from a vertical tracing position to a horizontal tracing position. A visiting card\* held parallel with the upper flat side of the register which corresponds to the occlusal plane, the pencil is moved in contact with the rack and pinion and the patient instructed to make an opening movement of the lower jaw, and the condyle path is accurately traced on the card (Fig. 39). This process is repeated on the left side, the tracings being lengthened by pencil mark (Fig. 40), the inclination measured with the small protractor found with the instruments, and entries made in the record (Figs. 42A and 44). A few typical records are shown in Fig. 26. The register is then removed, taking care not to distort the recording pencils in their equidistant position from the face.

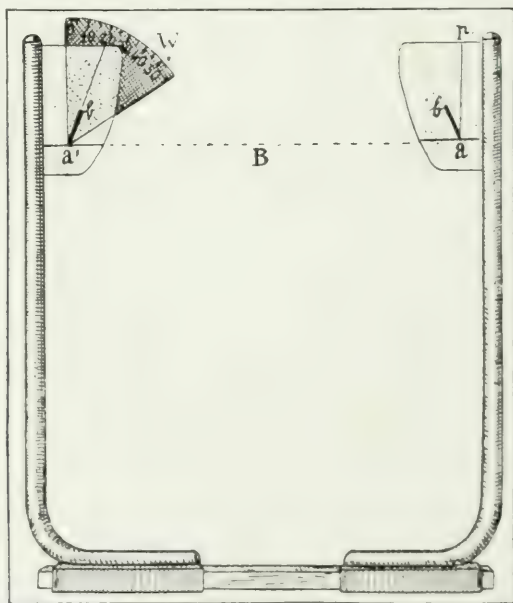


Fig. 37.

Showing the use of protractor after base lines are drawn and perpendicular erected.

## ROTATION POINT RECORD.

This is done on the upper surface of the horse-shoe plate by a small pointer which traces the path of the incisor upon the horse-shoe plates (Fig. 43 and Fig. 27 No. 9). Reference to Figs. 17 and 18 will indicate that the closer the rotation points are registered the more obtuse the angle will be,

\*Or better, see Fig. 42A.

CHART FOR ARTIFICIAL DENTURES

(AFTER THAT COMPILED BY J. W. MCCLERAN, OMAHA, NEB.)

NAME .....

ADDRESS .....

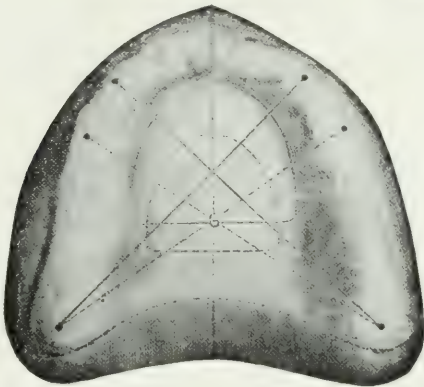
MEMBRANE		ARCH AND VAULT			GUMS	
HEALTHY	INFLAMED	HIGH	FLAT	OVAL	FRESH	PERMANENT
					REGULAR	
					FIRM	FLABBY

FLABBY  
SUBMUCOUS  
TISSUE

ABNORMAL  
MUSCULAR OR  
GLAND. ATTACHMENT

BONY PROMINENCE

UNDERCUT



LATERAL MOVEMENT

RIGHT ..... 0

LEFT ..... 0

CONDYLE PATHS

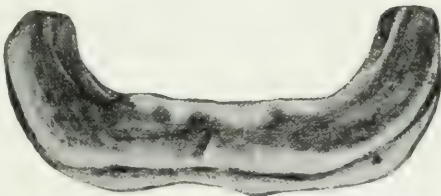
RIGHT ..... 0

LEFT ..... 0

ROTATION POINTS OUT  
FROM CENTRE

RIGHT AT NO. ....

LEFT AT NO. ....



SELECTION OF TEETH

MOULD NUMBER	UPPER	MEASUREMENTS	LOWER	MOULD NUMBER
	.....MM.	LENGTH OF CENTRAL INCISORS	..... MM	
	.....MM.	COMBINED BITE AND SHUT	..... MM.	
	..... MM	RIDGE LAP	.....MM.	
	.....MM.	WIDTH 6 ANTERIORS	..... MM.	
.....	..... MM.	WIDTH FULL SET, 14	.....MM.	.....

SHADE UPPER CENTRAL .....

COMPLIMENTS OF THE GYSI SCHOOL OF ARTICULATION

Fig. 38

Face of one style of record card for artificial dentures.



and the farther apart more acute. This fact is utilized by Professor Gysi, and with the mechanism shown in Figs. 43 and 27 No. 9, which consists of the incisor guide (which is a brass clip fastened to and melted into the trial plate, and upon which a tracer is mounted) and the upper surface of the horse-shoe plate, previously covered with blackened wax (lampblack melted in soft wax). These are adjusted in the

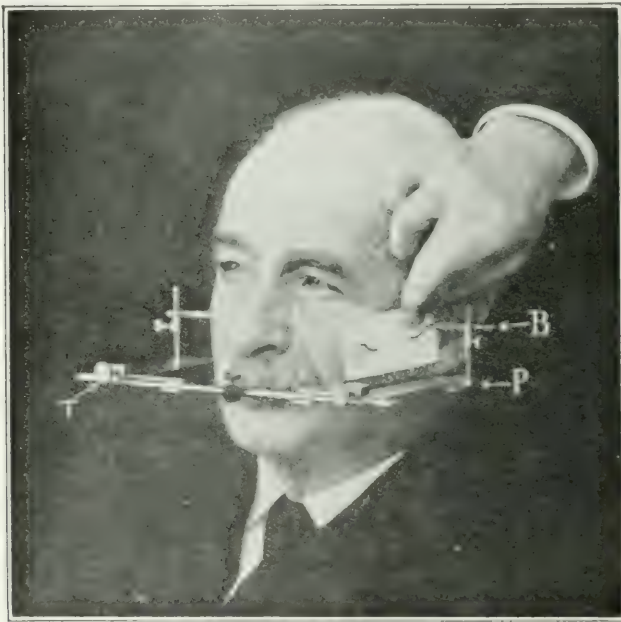


Fig. 39

Shows the forward and downward movement of the condyles are recorded by the horizontal pencils of the Condyle Path Register. The ends of the pencil are placed opposite the condyle heads. Fig. 45, a card is held against the face with its lower edge parallel with the broad plate of the register, and the mandible is caused to exercise its different movements. The movements of one condyle at a time are thus recorded. (See Figs. 26, 40, 41.)

Gysi, Cosmos, 1910.

mouth as in Fig. 44. The patient is instructed to make side movements until the sharp angle is traced. If the angle is not sharp, a forward bite is being given, and is useless (Fig. 44A.\* The tracer is then raised and locked out of the way in order not to mar the tracing. The trial plates are then stapled together and removed.

\*NOTE.—This is the only absolute test for correct rest bite known.

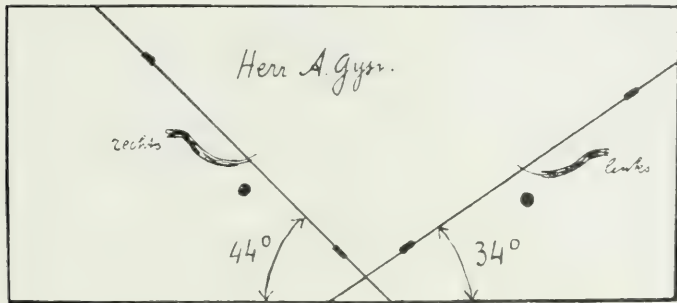


Fig. 40  
Right and left tracings of condyle path with inclination measured.  
Gysi, Cosmos, 1910

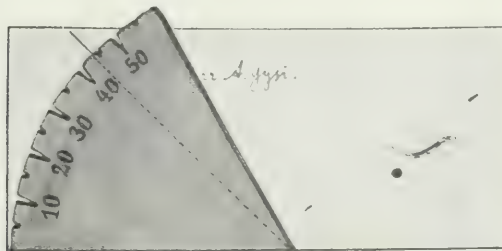


Fig. 41  
Showing the use of the protractor in measuring inclination of  
condyl paths.  
Gysi, Cosmos, 1910

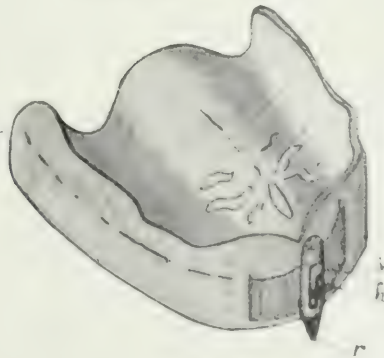


Fig. 43  
The incisor path register is here shown in position on the upper  
which the point may be raised, and "w" the little slot in which the  
trial plate, "r" is the recording point "h" the little handle by  
handle may be locked. Note especially that the incisor guide is so  
mounted that the point, when released, projects half its length below  
the upper trial plate. This maintains pressure on the Horseshoe plate  
and permits watching the pattern traced on the wax.  
Gysi, Cosmos, 1910

## RECORD OF MANDIBULAR MOVEMENTS. W. E. CUMMER, D. D. S.

Patient M

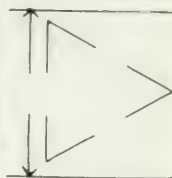
Restoration  
Notes.

Right Condyle Path tracing. Left

(over.)

FACE

Right.	Rotation Points.		Left.
	cm.	cm.	
Distance centre Articulator.	Diagram of tracing, oral		Left.
Lateral Movement.			
Length base line.	cm.		Left tracing
	Right tracing		
Notes.			
Estimated Bonwill Triangle.			



REVERSE

Blank Form of Card used by writer

## RECORD OF MANDIBULAR MOVEMENTS. W. E. CUMMER, D. D. S.

Patient M &amp; S.

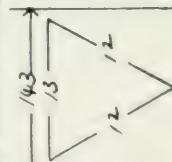
Restoration <sup>321</sup> *Joined and two Gilmore were attached*  
 Notes: *Balance upper teeth on old base with Gilmore*  
*Attachments however anterior right splinted, with*  
*wood-balls attached, lower back lig on cast*  
*aluminum saddles, with set and front splint-like*  
 Right 50°. Condyle Path tracing. Left 40°.

(open and close method)

(over.)

FACE

Right.	Rotation Points.		Left.
	cm.	cm.	
Distance centre Articulator.	Diagram of tracing, Total		Left.
Lateral Movement.			
Length base line.	cm.		Left tracing
	Right tracing		
Notes.			
Estimated Bonwill Triangle.			



*detected movement short; 50-  
 joined with differentials, natural  
 teeth. 321/204 with upper vol.  
 Centre declivity with clogs, sup.  
 playing the balance for 4 yrs  
 now motion zone and before  
 previous to set, i.e. relatively few  
 movements for at least 5 yrs*

REVERSE

Form as above with entries of case

Fig. 12a.

Fig. 42a.

These cards are made from good stiff stock and are cut at  $70^\circ$  on the lower corners, making a better surface contact on side of face by avoiding the lower part of the external ear. They are indexed alphabetically in a card index box made to receive them, and in handling two or more cases on the one articulating frame, are useful in changing the registers on the articulator to suit the individual requirements. On the face side of the card the condyle path tracings are actually made and the degrees measured and entered opposite the words "Right" and "Left." On the reverse side of the card, under rotation points, the distance in centimeters found from the center of the articulator, found from the Incisor Path tracer (Fig. 44) is entered. Above the words "Diagram of Tracing" a diagram is transferred from the wax tracing on the upper surface of the Horseshoe plate (Fig. 44A), from which the rotating points of the articulator are set, and the angles filled in. Under the words "Lateral Movement," the actual tracing on the glass plates (Fig. 36) is transferred by tracing paper to the card. The angles, as measured (Fig. 37), are entered opposite the words "Right Tracing" and "Left Tracing," as well as the length of the base line. The Bonwell triangle may be estimated by measuring the outside of the face and deducting for the thickness of tissue between the outside and centre of condyle (about 12 MM on each side), and the distance to the tip of the lower incisor. It may be noted that a number of the measurements included on the card are not necessary for practical purposes, but for purposes of investigation. The only data required for practical purposes are the inclination in degrees of the condyle path and lateral movement right and left; and the distance from the centre of the articulator in centimeters of the rotation points, right and left.

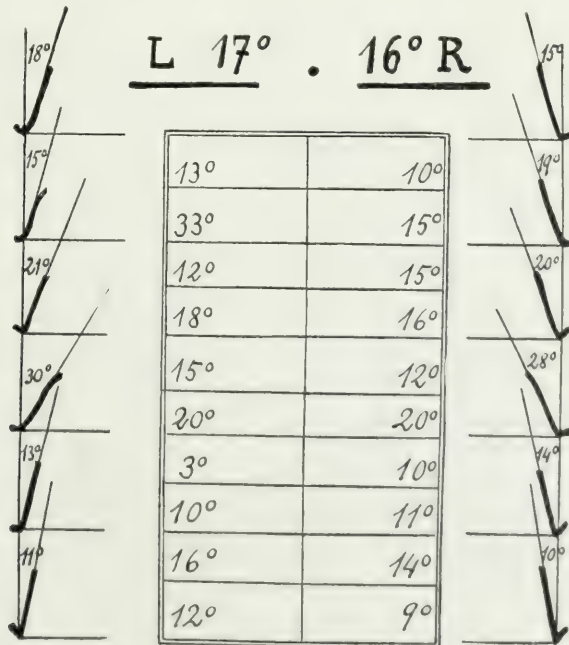


Fig. 42



Fig. 42

Six pairs of condyles have their inward lateral movements recorded in the tracings. Ten other pairs have their degrees of inward lateral movement recorded in the central columns, but the tracings are not given. The average inward movement of these 16 pairs of condyles is 17 for the left condyle and 16 for the right. To get the proper effect hold the bottom of this illustration nearly as high as the eye and look along the illustration from bottom to top.

Handbook, Gysi Articulator



No. 44a.

A pattern traced by the Incisor Path Register. A very valuable function of this pattern is to indicate whether the patient is "biting forward." So long as the patient "bites forward," the front angle of the pattern will not be sharp.

Gysi Cosmos, 1910



Fig. 44

Shows the Incisor Path Guide registering, on the blackened area of the Horseshoe plate. The Guide must be mounted high enough above the plate, so that the pattern can be clearly seen.

Gysi, Cosmos, 1910

(To be continued in January number)

## ***Annual Conference of the Oral Hygiene Committee of the Ontario Dental Society, held at Toronto, November 19th, 1913***

BY R. H. McDONALD, D.D.S., HAMILTON.

THE invitation of the Oral Hygiene Committee of Ontario to the various Dental Societies to meet in Toronto on the afternoon and evening of the 19th November was responded to by about thirty representative men from different towns and cities of the Province, some being interested enough to take the long journey from Ottawa. Nearly all the larger places were represented, and we received just such a welcome as one invariably receives at the hands of our good friends the Toronto men.

The object of this meeting was of a two-fold nature. (1) To enable the men of other cities and towns to have an opportunity of seeing the free dental clinics which the Toronto Board of Education and Board of Health were carrying on. (2) To endeavor as far as possible to inspire the guests from other cities with the gospel of oral hygiene, so that when they returned to their own communities they would be filled with enthusiasm for the cause, and would be in a better position to formulate plans for the improvement of oral conditions among the children of all the schools.

We were received by the Executive of the Oral Hygiene Committee and other men of the Toronto profession at the College building about 2 o'clock and, after giving us the glad hand, they proceeded to give us a very pleasant afternoon. The members of the profession who possessed automobiles took us to see the clinics supported by the city of Toronto. Of these they have four under the control of the Board of Education:

- (1) Queen Alexandra.
- (2) Annette School.
- (3) Roden School.
- (4) Earls court.

In each of these schools the Board of Education has fitted up an operating room and provided a graduate operator. The equipment of each of these rooms is very clean and has the appearance of being carefully looked after. Chair and cabinet are white, and a sterilizer graces each room, which is not for ornament but is used after every operation to insure cleanliness and avoid carrying infec-

tion. Each room also has fountain cuspidor and a desk and secretary.

We also visited the municipal clinic, at the corner of Grosvenor and Yonge Streets. This is separate from the school clinics, in that it is under the control of the Medical Health Officer.

In this clinic we found three operators and equipment very much as we had already seen in the school clinics. Provision was also made here for properly sterilizing the instruments after each operation. One feature was noticed which was not in evidence in the school clinics: this was the provision made for giving an anaesthetic where it might be desirable. They usually try to confine this work to Saturday mornings, so as not to interfere with the other work.

After watching these operators at work on little children, many of them not any too well cared for in other respects, and some not any too healthy, I feel certain that every man of us felt that conditions in Toronto at last were coming to what they ought to be, and we decided in our own minds that we would do what we could to give the children, yes all the children, in our different communities the chance to be healthy and strong and normal instead of neglected and sickly. The children are carefully examined as to eyesight, hearing, nose, throat and teeth, and while the dental clinics look after the teeth which need care, children needing medical aid are looked after by physicians appointed for the purpose. May this movement, which has first begun in Toronto, spread till every city or town of sufficient size to maintain a clinic shall have one established, that the sons and daughters of all the people (rich and poor alike) shall have first-class attention as to their teeth and health, that they may be as efficient as possible. We were very much interested in some special classes which the principal of Queen Alexandra School showed to us. The class for dull pupils was very interesting, the individual scholars getting much better care than would be possible in an ordinary class. We also were allowed to visit domestic science and manual training classes. It was very pleasing to see how kindly boys of all ages took to the use of plane, saw and chisel.

We were taken to the Central Y. M. C. A. and saw the most up-to-date Y. in Canada. A young man can room and board right in the Y. building, and in conjunction with the many other privileges of the institution make it one of the finest of modern advantages a town boy may have. After

all these enjoyable and instructive sights we were taken to the Grand Union Hotel and enjoyed a splendid dinner, which in no small degree satisfied our inner longings.

After dinner the regular meeting of the Committee of Oral Hygiene took place in the hotel parlor, when the following programme was followed with the greatest interest and profit by all those present:

### ***Chairman's Address.***

BY W. CECIL TROTTER, B.A., D.D.S., TORONTO.

**M**EMBERS of the Ontario Oral Hygiene Committee and Guests:

We, your Executive Committee, bid you a hearty welcome to this conference. We trust that you have had an enjoyable and profitable afternoon's tour of inspection to the various city and school dental clinics. What you have seen to-day and what you will hear to-night should send you home bubbling over with enthusiasm for the oral hygiene cause. You must have been impressed with the crying need for such clinics as you have witnessed, and you no doubt see how practicable they are. If you will go home and inaugurate the proper kind of educational campaigns, there is no reason why you will not be able to so enthuse your school board, your board of health, and the public that they will willingly vote you the necessary power and means to create a regular inspection of school children's teeth, to be followed later by an established clinic.

I presume that your first efforts should be directed towards educating the dentists in your town or district to the urgency of such a public campaign. Many of our own profession still fail to realize the great need there is for regular inspection and care of the teeth of our public school children. They also fail to realize how the accomplishment of these ideals will greatly enhance the prestige of our profession in the eyes of the public and how, indirectly, it will greatly increase the demand for high-class dental services of a preventative nature.

If our educational crusade is ultimately successful it should result in the gradually lessened demand for operations involving the replacement of lost tooth tissue, and in its place create an increased demand for frequent prophylactic treatments. Were all the people properly taught to



have their teeth cared for, the dental schools could not supply the demand, even were they to graduate treble the number in the next ten years. Therefore no dentist need oppose this work even from the selfish standpoint that educating the public in preventative measures might lessen the demand for dental service, because such could not possibly result in our time. We all should gladly look forward with hope to the time when by systematic care of the school children's teeth and regular prophylactic care of all people's teeth, decay of the teeth will become a matter of rare occurrence, and dental services will consist for a large part of prophylactic treatment and professional advice as to, what to eat, when to eat, how much to eat, and how to eat it, to obtain the best effect on the general health. When these halcyon days arrive it may be necessary for us to be assisted by dental nurses to enable every person to receive the necessary treatment, be they rich or poor. This picture I have painted is a goal to which we all should work. Every man can do something to aid in the campaign to educate the public to this standard, even if it is only to become a member of the Ontario Dental Society, thereby aiding the movement in no small way by the contribution of his fee, part of which is expended in this oral hygiene work.

To-night you will no doubt hear of suitable methods for interesting your various public bodies in this work, whether it may be by your own personal influences, the influence of statistics and literature on this subject, or by use of public dental lectures, moving picture films, etc. Most of us need a broader and clearer vision to realize the enormous and far-reaching possibilities of this great work, which is really only limited by our own energy and ambition.

### ***Examination Chart.***

**A**N Examination Chart was presented by R. G. McLaughlin, D.D.S., and, after slight amendment, was adopted by the Oral Hygiene Committee of the Ontario Dental Society, to be used in the examination of school children's teeth throughout the Province of Ontario.

#### **RECORD OF DENTAL INSPECTION.**

School ..... Grade .....  
 Name ..... Address .....  
 Birthplace ..... Sex ..... Age .....  
 Condition of Temporary Teeth—

Prematurely Lost ..... Decayed ..... Filled .....  
 Number of Temporary Teeth that Should be Extracted to  
 Prevent Irregularities of the Permanent Teeth .....  
 Condition of Permanent Teeth—  
 Lost ..... Decayed ..... Filled .....  
 Number of Permanent Teeth so much Decayed as to Neces-  
 sitate Immediate Extraction .....  
 Number of Abscesses or Pus Exudations .....  
 Pain: Yes ..... No .....  
 Total Number of Diseased Teeth .....  
 Cleanliness of Mouth—  
 Good ..... Fair ..... Bad .....  
 Malocclusion: Good ..... Fair ..... Bad .....  
 Power to Masticate: Good ..... Bad .....  
 Breathing: Good ..... Bad .....  
 Remarks .....  
 Date .....

Inspected by Authority of School Board.

## ***How to Introduce Oral Hygiene to People of Towns and Outside Districts.***

BY D. M. FOSTER, D.D.S., GUELPH.

**W**HEN I was asked by the committee to give you this paper I consented because I was anxious to do anything in my power to help the oral hygiene movement, and, coming from a small place, thought that I might be able to help some committee of another small town. The conditions between the large and smaller cities and towns are different. As a rule in the latter there is not the poverty, and consequently not the same need of free dental clinics, as there is in larger cities, nor is there the money to support them. In the small places the people individually are more easily educated and reached. On the other hand, in the large cities organized civic medical and health departments, with skilled officials, do a great deal of educating. In the small places it is the individual effort of the dentists themselves that must educate the people as to the value of oral hygiene, and it is my purpose to describe a few means which may be employed by the local Oral Hygiene Committees.

The first thing is to form a committee of as many dentists of the town or district possible, and then to divide up the work between them. They must fully inform themselves of facts, figures and arguments in favor of hygiene. These can be obtained from reading dental and medical periodicals and reports. One of the most important moves is to get the editors of the local newspapers influenced for good. As they are busy men, the best way, in my opinion, is to call, tell them briefly of the work the committee is attempting, and leave with them magazines and reports with marked articles and paragraphs on the subject of oral hygiene. Ask that these be read, and that later you will call. You will find them willing to help and generally anxious to print any matter the Oral Hygiene Committee, or the member detailed to that work, may send them. If possible send something in every week; the public will soon look for it, and there is nothing like the press as an educator.

Next interview the Hospital Board and talk oral hygiene with the local physicians. The result will likely be an invitation to give talks or lectures to the nurses. A course of lectures with an examination may even be arranged. The ordinary hospital needs a lot of oral hygiene.

The committee should get a set or sets of the oral hygiene cards, for I think they are one of the strongest and most convincing agents we have. They are well gotten up, easily understood, and are endorsed by the Medical Department of the Toronto Board of Education. These cards made one of the best, if not the best, showing in the health exhibit which travelled all over Ontario this last summer. Many complimentary remarks were made about them.

Go to your leading druggist and ask his co-operation. Let him display in his windows a number of the hygiene cards. He will do this, as a number of cards show the use of the brush and results of non-use.

Each member should send for a few hundred copies of Bulletin No. 204, "Decay of the Teeth." These are to be obtained from the Department of Agriculture, Parliament Buildings, Toronto. A card will bring a bundle of them by return mail. When dismissing a patient present him with a copy, and ask him to read it. I take the trouble frequently, especially with young people, of marking certain paragraphs for the patient's attention. These bulletins are a great help.

Next we come to the great object of the committee's

work, which is the introduction of oral hygiene into the schools. A request should go into the Board of Education for permission to address the Board on the subject. This having been received and acted upon, to bring the condition of the children nearer home, permission might be asked to examine a school or certain number of children, and later to bring in a report. Do not be in a hurry to bring in this report, for you want the education the public is getting in oral hygiene to have its effect.

In Guelph it fell to my lot to examine the children. I inspected altogether about six hundred and fifty. As I could not get any examination blanks in Canada, I had to go to the Addison Publishing Co. of Pittsburg. These were fairly satisfactory, although I think a better one might be compiled. My assistant worked with me, and we could generally manage to examine about thirty children in a morning. I used to go on Monday mornings, and did work from 9.15 to 11.45. My method was to inform the teacher of the room I was to inspect a week ahead, so that the parents would know about it, and, if they objected, could refuse to have their child or children examined. Be sure to do this, as you have no authority, but only permission of the Board. On the morning I inspected I would talk to the room of children for from five to fifteen minutes, according to their age, telling them what I was going to do. I also demonstrated how to use a brush. There is generally a room in each school which the dentist may use, and the children can be sent to him in batches of five to ten at one time. The child, after examination, was given the original copy of the chart with a copy of Bulletin 204 to take home to his or her parents, while the copy was left for record work. Be sure when the report goes before the Board of Education that the local papers each get a copy.

During all this time, for months will likely have passed, the people are being educated by their dentists, by the press, children's examination charts, and Bulletins, so that when the report of the school inspection comes before the Board they (the Board) will feel that if they decide on a medical and dental inspection of school children the public will stand the expense. It is useless to expect the Board to institute such inspection unless it is going to meet with the approval of the public, which pays the bill.

It would be wise also for some of the Oral Hygiene Committee to visit Toronto and find out the cost of a dental inspector and school nurse for the home town, for that will



be raised, the question of cost. Copies of the report of the Chief Medical Inspector of the Toronto Board of Education might be sent to each member of the local Board and the editors of the papers. The report is wonderfully convincing, and could not help but have a great effect.

An address might be also given to the teachers at one of their monthly meetings, for they are important allies and have a great influence through the children. Here the charts come in handy. Addresses to mothers' meetings have good results, as for instance: We have outside of Guelph the Macdonald consolidated schools. They have mothers' meetings, and one of our members had addressed a meeting some time last year. I was asked by the trustees to examine the children and to make a report. I told them I could see no use of this, as the parents were already informed of the general condition of school children, and that is all my report would do, but as they persisted, I complied, and found this: 25 per cent. of the children had had dental treatment and 25 per cent. did not require treatment, while in the city schools only 4 2-3 per cent. had been attended by dentists and only 7 per cent. did not need attention. I could see no reason for this difference unless it was the result of the oral hygiene talk and the interest taken, due to the mothers' meetings. This school also bought a set of hygiene cards for use in the school.

Noon-hour talks with the help of charts might also be given to factory employees. These might be given at the request or under the auspices of the manufacturer or the Y. M. C. Association.

I have not touched on the use of the dental moving picture film, and what worth it may be I cannot say, for the Guelph Committee have not tried it.

I have given in this paper many ways by which interest may be aroused in a small town, but I do not wish it to be understood that all of them need to be used. That may be out of the power of the one or two dentists the place contains. I have written it for the guidance of the dentists in towns where there is no dental or medical inspection of school children and where, on account of the expense, the best that can be expected in the future for some time is a medical inspector with a school nurse, and more likely only a school nurse, but even that is a great deal.

The objection may be raised that the dentist will be ac-

cused of working up business, and no doubt that will be said by some of the most ignorant. However, the public is being educated very rapidly, and is recognizing that dentistry is a very important branch of conservation medicine, and is looking to the dentist for its dental education, and not to the many manufacturers of brushes, dentifrices and washes. These men in the past have done their share, far more perhaps than we will ever know, but now the public is beyond that and is looking, as I said, to the dentist. Let us be up and doing, for this educating of the public to the importance of oral hygiene is the main purpose of our profession, the prevention rather than the cure. Let the dentist take his proper place in public life, and let every local school board have a dentist on it, and let him be strongly in favor of medical and dental inspection. I say medical first, for when that is decided on the dental inspection will come naturally, as the two go together.

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***Are there Others who do not know Why  
they Pay an Annual Fee to the Royal  
College of Dental Surgeons of Ontario ?***

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**I**F there are any such, we publish the following letter received by the Treasurer, and his reply to the same, for their enlightenment. Did men really consider this matter seriously, they would not be so thoughtless in causing the Treasurer so much unnecessary trouble and expense by their uncalled-for delay in paying their small annual contribution towards the expenses of the Board of Directors of the R.C.D.S.

November 8, 1913.

*Dr. W. C. Trotter, 326 Bloor St. West, Toronto, Ont.:*

DEAR SIR,—In reference to the annual fee of two dollars, supposed to be paid to the R.C.D.S., can you enlighten me as to the legitimacy of this fee being asked of each dentist, and to what use the money is put?

If I honestly owe this money (never having paid any fee as yet), I will pay same; but you must convince me.

Yours sincerely,

---

326 Bloor St. W., Toronto,

Nov. 13th, 1913.

DEAR DR. ———:

In reply to your letter of yesterday, I would offer you the following reasons why you should pay your fee, besides the one that it is compulsory by Act of Parliament, and can be collected in court. It would be more difficult to offer you reasons why you should not pay the fee. I would consider the main reason is because the annual fees of the practitioners go towards paying the expenses of the Board of the Royal College of Dental Surgeons of Ontario, of which you are a member by Act of Parliament, and which protects you in the practice of your profession. In return for the fees received from its members, the Board which you elect searches for illegal practitioners, secures evidence against them and prosecutes them. It also endeavors to cure flagrant and fraudulent advertising, and attempts to create a high ethical standard for the practice of dentistry. You will notice every year in the annual report sent you by the College that large sums are annually expended by the Board in this discipline work. Were it not for this, we would have all kinds of illegal practising and quackery to contend with. There is no province or state on this continent, I venture to say, which has as little trouble to complain of along these lines as have we. The value of such service as this to each of us practitioners is incalculable. No member of the profession could expect this work to be carried on by the students' fees.

Another reason why the members of the College and of the profession should gladly pay this small annual fee to maintain a Board of Directors for the College is because in this way they control the College and its destinies themselves by an elective Board, which maintains an efficient and up-to-date school, with a high standard for the training of dentists. Is this not much better than having a privately owned College, over which you would have no say or control? All the money taken in at our College is used for the improvement of the College building, its equipment and its teaching staff, and is not paid out in dividends, or in directors' salaries, as is so commonly done in many states.

It is a decided advantage to every one of us practitioners to have a College with a high educational standard, capable of turning out competent, well-educated and well-

principled dentists, rather than a College for earning profits at the expense of men graduated.

Although the College is not conducted for profit, it has managed, in the course of years and by the aid of the annual fee of its practising members, to work itself into a pretty satisfactory financial position. I suppose if the doors of the College were closed and the property, building and equipment sold, and the proceeds distributed among its shareholders (all the practising dentists of this province not in arrears) that each dentist would receive at least one hundred dollars. This is another reason why everyone should pay his annual fee, as he can hardly expect to be a shareholder and participating partner in the holding of valuable assets without contributing his pro-rata share in the creation of a surplus which has been accumulating for years through the aid of fees paid in by his confreres. It would be grossly unfair if some could pay and others refuse, just as they saw fit. It was for this reason the Government made the payment of the fee compulsory. This leads to a last and important argument why the fee should be paid, and that is because any practitioner who is in arrears has no legal status, and cannot collect any of his accounts in any court of law so long as he is in arrears. The payment of an annual fee is also compulsory in law and medicine; but in both these cases the fee is much larger. No profession could be properly disciplined without a supporting fee of this nature. The cost of carrying on the elections every two years is defrayed out of these fees also.

There are probably other good reasons besides those I have mentioned. Until I undertook the duties of Treasurer, I had no idea that the advisability of paying the annual fee was ever questioned. In assuming the duties, I have accepted I have to make great personal sacrifices, as you may readily imagine, and I believe that every other member of the Board is sacrificing his own personal interests for the sake of the College and the profession, and I think the least the individual members of the College can do is to pay their fees promptly and willingly, and I have no doubt they would do so in every case did they really consider the matter seriously and realize the benefits that accrue to each of them.

Yours faithfully,

W. CECIL TROTTER,

Treasurer R.C.D.S.

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## PERSONAL PAGE



**D**R. E. S. BARBER, of Chicago is organizing a class in Analgesia and Dental Economics, to be held during the week commencing the 19th of January, 1914, in the City of Toronto. The fee is \$50.00. Dr. Barber has authorized the Temple-Pattison Co. to receive applications and supply any further information that may be desired by members of the profession.

The following candidates were successful in the Alberta Board Dental Examination in October: Dr. Fox, Maple Creek, Sask.; Dr. McDonald, Truro, N.S.; Dr. Gilchrist, Lethbridge, Alta.

Dr. L. I. Mills, Calgary, intends moving into the new Herald Building upon its completion about Jan. 1, 1914.

Dr. N. J. Sills has moved into his new office, Eighth Avenue West, Calgary.

Dr. A. E. Hennigar, Pugwash, N.S., is visiting in Calgary, and intends taking the Alberta Board examination next May.

Dr. J. E. Wilkinson, formerly of the J. E. Wilkinson Co., Limited, of Toronto, has opened an office in Edmonton. Dr. Wilkinson's many friends throughout Canada wish him the greatest measure of success in his new field of work, and cordially welcome him back to the ranks of the dental profession.

Dr. J. N. Guy, McLeod, Alta., is visiting Vancouver, and intends to take the British Columbia Board examination.

Dr. Chas. Dent has opened an office in Revelstoke, B.C.

Dr. T. W. Fox, Maple Creek, Sask., who recently passed the Alberta Dental examinations at Edmonton, will probably locate in Calgary or Edmonton.

Dr. Cleary Wray, formerly of Deseronto, Ont., is now practising in Redcliffe, Alta.

Dr. Gilchrist, Lethbridge, Alta., who passed the Alberta Dental examinations, will assist Dr. O. J. Courtice, of Lethbridge, for some time before locating permanently.

Dr. A. A. Hollis has moved into his new office, Eighth Avenue East, Calgary.

Dr. F. H. Moore and Dr. Horace Wood, of Vancouver, are receiving hearty congratulations from friends these days in view of recent "family additions."

Dr. H. H. Hare has opened a very fine office in the Mahon Bldg., Victoria, B.C.

Dr. R. M. Stewart, Markham, Ont., is moving to Toronto for the purpose of locating in practice in that city.

Drs. Irwin and Mitchell, of Collingwood; Dr. Hartman, of Meaford; Dr. Allan, Mount Foreest, and Dr. Patterson leave next week for a two weeks' trip to the North in search of deer. Here's hoping they may return with their full legal quota.

Dr. J. G. Bannerman, of Owen Sound, has closed his office for six months. He is taking an extended vacation.

Drs. J. C. Allan, F. H. Jones, and Harry Wilson have received appointments on the staff of the Department of Medical Inspection of the Board of Education, Toronto. Each is in charge of a school dental clinic.

Dr. N. S. Coyne, who practised for some years in Ridgetown, recently removed to Toronto. Dr. Coyne was a member of the Public School Board, and was active in many ways in the affairs of the town. He will be greatly missed by his Ridgetown friends, as well as by the citizens generally.

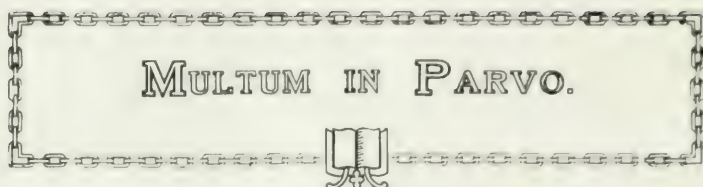
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### ***Wanted - - Graduate.***

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Graduate Dentist Wanted as Assistant.

Box A., Oral Health



This Department is Edited by C. A. KENNEDY, D.D.S., 2 College St., Toronto  
Librarian, Royal College of Dental Surgeons of Ontario

*Helpful Practical Suggestions for publication, sent in by members  
of the Profession, will be greatly appreciated by this Department.*

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A VALUABLE USE OF BITTER ORANGE OIL.—The objectionable odor from your nitrous oxide tubing or somnoform inhaler is positively removed if three drops of Oil of Bitter Orange is placed in the tubing or on the gauge of the inhaler. A few drops (3 or 4) on the ether mask and the patient scarcely can smell the ether. It is the best thing yet brought out for the purpose.—*H. B. Clark, Dental Review.*

REMOVING A SHELL CROWN WITHOUT MUTILATION.—A small hole is drilled buccally just below the occlusal surface of the shell crown, and an old instrument with a slightly curved point is inserted into the hole. By using the surface of the root as a fulcrum it is surprisingly easy to remove the crown from the root. The hole in the shell crown can easily be repaired.—*H. K. S. Taylor, New Zealand Dental Journal.*

ENLARGING NARROW AND TORTUOUS ROOT CANALS.—If there is a sharp turn in a root and a reamer is forced beyond the curve and twisted, it is liable to break. In order to avoid this accident, it is good practice to ream out the first two-thirds of the canal only, by means of a Kerr broach, and depend on ordinary barbed or plain broaches for clearing the apical third of the canal.—*C. E. Fillman, Dental Digest.*

DENTISTS AND GENERAL ANESTHESIA.—It was decided by one of the courts at Paris recently that surgeon dentists who have received a diploma since November 30, 1892, after having taken the necessary studies for the practice of surgery, may use local and general anesthesia in their operations without being obliged to call a physician.—*Paris Letter, Journal American Medical Association.*

# ORAL HEALTH.

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## EDITORIAL.

CHRISTMAS is coming. Hurrah! Let's all be boys again and forget the high cost of living, the money stringency, and the rest of our troubles—real or imaginary. With Mrs. Wiggs, let us bury our troubles, sit on the lid and keep it shut down tight, until after Christmas at least.

If we want to really enjoy the Christmas season, we will bring joy and happiness into the life of "the other fellow." Let us all get busy on ways and means and be a Santa Claus to some brother-man who is carrying a heavier burden than we ourselves.

The Editorial Staff of ORAL HEALTH commences here and now to pass along Christmas greeting by cordially and sincerely wishing our readers *A Merry Christmas and a Happy and Prosperous New Year.*

A LARGE and representative deputation from the Women's Institutes of Ontario waited upon the Hon. Dr. Pyne, Minister of Education, with the request that a system of compulsory medical and dental inspection be established in both rural and urban schools. The Minister stated that the Act at present permits Boards of School Trustees to establish a system, and he felt that it would be necessary for public opinion to be more fully aroused before a compulsory system could be established.



### *Effect of Oral Hygiene on Toronto School Children.*

---

**A**T a recent meeting of the Board of Education, Toronto, Dr. Conboy moved for a report from the inspectors as to the effect of the dental treatment already given to children in Roden and Lee schools. The following report was submitted:

In reference to the dental work in Roden and Lee Schools the Inspectors report as follows:

(a) Roden School—Inspector Bruce.

“It is rather soon yet to make comparisons. The effect on the general health of the pupils is obvious. So far, interest has been aroused in the children to take better care of their teeth. Dental work is very desirable in a school like Roden, owing to the population being mostly foreign. Their houses are small, the children do not realize the value or importance of taking proper care of the teeth, and the parents as a rule are not able to provide for dental work. The general effect on the appearance of the class and on their work is good.”

(b) Lee School—Inspector Armstrong.

“The girls are healthier and happier since its introduction, and hence better students. The attendance is very regular. The teachers are delighted with the service.”

---

### *The C. D. A. Convention Date.*

---

**O**RAL HEALTH has communicated with ten Toronto dentists, enquiring of each what time would be most convenient for their attendance at the Canadian Convention in Winnipeg next year. Without a single exception, the suggestion was made that the Convention be held during the month of July or August. Some of the men suggested early in July, others late in August, but all wanted to combine the Convention with a vacation trip, while those who had not previously visited the West desired to go on to the coast.

Seven men out of ten stated that any date in May would be most inconvenient, and render their presence at the Convention almost out of the question.

"THE PERFECT ANTACID"

# PHILLIPS' MILK OF MAGNESIA

It PRESERVES THE TEETH, and  
 CRIES SENSITIVENESS STOMATITIS  
 EROSION GINGIVITIS PYORRHEA  
 are Successfully Treated with it.

## PHILLIPS' PHOSPHO-MURIATE OF QUININE TONIC AND RECONSTRUCTIVE

For use before and after dental operation with marked beneficial  
 effect upon the nervous system

New York THE CHAS. H. PHILLIPS CHEMICAL CO., London  
 Canadian Agents:

WINGATE CHEMICAL CO. 545 Notre Dame St., Montreal  
 who will send samples upon request

Dentists find it convenient to have in their office a bottle of



THE FOOD DRINK FOR ALL AGES

GRATEFUL AND SUSTAINING after Anaesthesia, Extractions  
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AN IDEAL FOOD for Dyspeptics and Nervous Cases

OUR LUNCH TABLETS, plain and with cocoa flavor, relished  
 by children

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## The Right Paste in the Right Spot

One application kills exposed nerves



Money back if not satisfactory

PRICE = \$1.25

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(Patented)

**No Waste of Anaesthetic. No Waste of Time.**  
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The new cartridge packing affords distinct advantage: (1) more even pressure on the plunger, hence more durability (2) greater cleanliness, as washers are enclosed in a container (3) greater convenience, as **cartridges are kept in Stock by dealers**, and syringe can be repacked and ready for use in fifteen seconds.

Imperial No. 2. (Crutch Handle if desired)	Each
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Imperial No. 2, complete in paper box, with two needles	2.25
Imperial Packings in cartridge form, including four needle washers	.25



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Water Syringes, Needles, Etc.

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With Replaceable Teeth.

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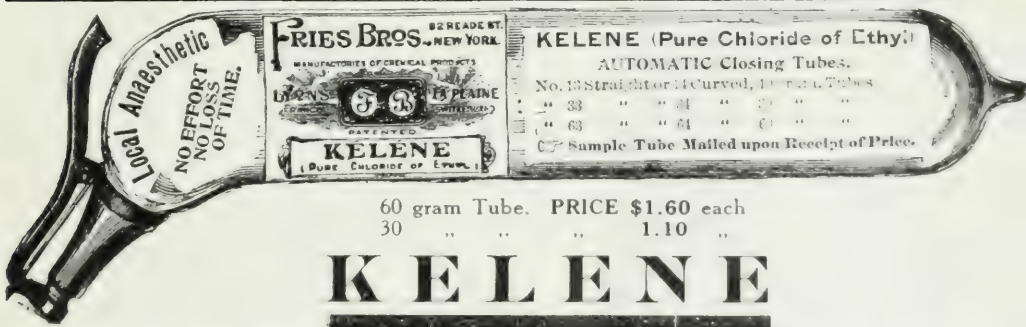


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60 gram Tube. PRICE \$1.60 each  
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**Harmless, regardless of how frequently used.**

**Easily applied with uniform results.**

**Convenient to carry, supplied in 10, 30, and 60 gram glass tubes.**

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*Showing the Practical Adjustment of Head-rest for Different Styles of Hairdressing.*



Showing a side view of the head-rest adjusted for patient. The pads support and rest the head in a perfectly natural manner.

A rear view shows the pillow arrangement of the head-rest for the hairstyle of the same patient. This is the only proper way of fitting such a style of hairdressing.



Perfect physical relaxation of the patient is desired by dentists who know their work is then made easier for both, and a study of this feature will show the right proportionate support of this chair to the different parts of the body and the natural relaxation accomplished by this means.

The different style of hairdressing in this and the preceding picture requires another adjustment of the head-rest pads by spreading and elevating their angle. It is shown the head held tight in them, turning the body without without disarranging the hair during an operation.

*There are many more positions and points of superior excellence shown in our 1913 catalog, a copy of which will greatly interest you.*

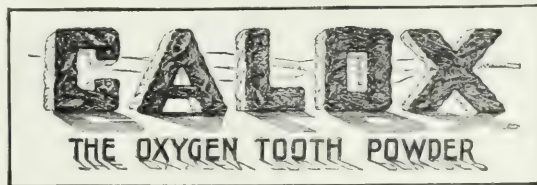
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ITS PRINCIPLE is the evolution  
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ITS EFFICIENCY as a cleanser  
of the teeth is due to the active  
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Let us send you samples for personal  
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## THE LEIGHTON-JACKES DENTAL CHAIR



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 SIMPLE IN CONSTRUCTION.  
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THE NATIONAL  
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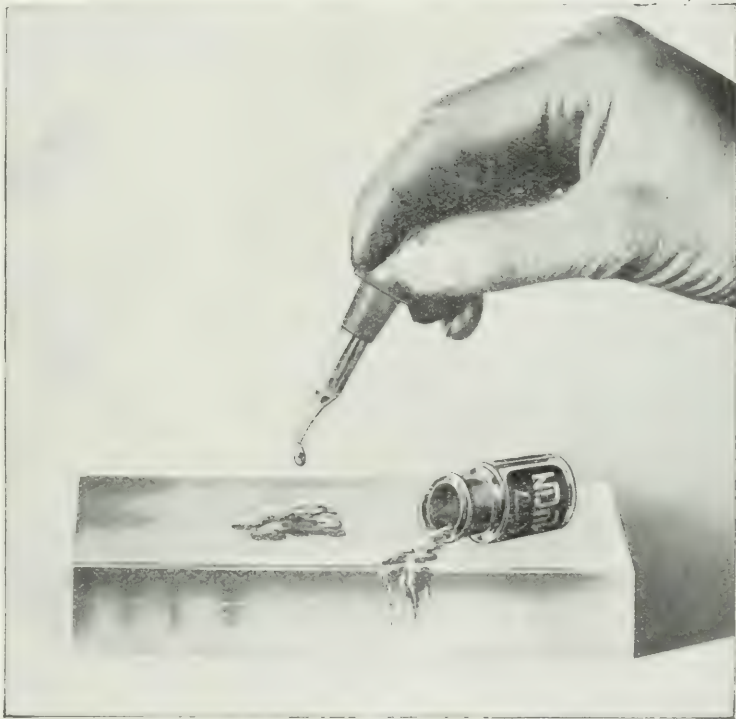
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If the liquid of a silicate cement is affected by atmosphere, the chemical union of the powder and liquid is not the same with the last half as with the first half of the bottle of liquid.

If the materials are properly balanced when the liquid is fresh, they are not properly balanced when the liquid is partially used.

You are dealing with an uncertain quantity because one of the ingredients has evaporated. This may account for the good results you sometimes have and the poor results you have at other times.

## **The liquid of TRANSLUCIN is not affected by the atmosphere**

The last drop of liquid will produce exactly the same results as the first.

In addition to this, it is more translucent than any other silicate made and it is extremely adhesive, so undercuts are not essential, and it possesses marvellous edge strength.

It has no effect upon the pulp and will not discolor in the mouth.

Order a package from your dealer and if it falls short of our claims to the slightest extent, send back what is left and he will credit you full price charged.

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# EASY MONEY

**SWELL YOUR  
BANK ACCOUNT**

by sending your refinings  
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Our Gold Plate and Solders are the favorites throughout North America. Our Filling Golds are generously good inasmuch that they will more than answer your demands.

## **PRICE LIST**

Mat Gold, $\frac{1}{8}$ oz. ....	\$4.50	22k. Plate, per dwt. ....	\$1.05
Cylinders, $\frac{1}{8}$ oz. ....	3.50	20k. , , , , , , , , , ,	.95
14k. Solder, per 1 dwt. ....	.65	24k. , , , , , , , , , ,	1.10
16k. , , , , , , , , , ,	.75	Clasp , , , , , , , , , ,	1.10
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Smelting and Refining Co. Limited

24 Adelaide Street West,

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# PYORRHEA

We invite the attention of the dental profession to a careful consideration of the value of **Sal Hepatica** in the treatment of diseases of the Uric Acid Diathesis. It has been found specially beneficial in the treatment of **Pyorrhea Alveolaris**.

It happens that patients suffering from this affliction will likewise complain of disorders of digestion, and they are frequently poorly nourished and of cachectic appearance. It is common to attribute these constitutional symptoms to imperfect mastication and consequent deficient insalivation dependent upon the loosened teeth and tender gums. It is also reasonably claimed that the septic discharges from the diseased alveolar process not only interfere with normal digestion, but are in themselves poisons which have an appreciable effect upon the general system. Is it not possible, however, that these symptoms, which are commonly considered secondary in their nature, in reality stand in the causal role, and that the treatment should be primarily directed toward their removal and that the local treatment of the tooth and alveolar process should be considered as a secondary requirement? If this is true, it can be readily understood that benefit would be derived from the administration of **Sal Hepatica** for its general systemic effect, while the thorough cleansing of the alimentary canal which follows its administration might logically be expected to be both prophylactic and curative.

Furthermore, **pyorrhea alveolaris** appears to be a malady in which rheumatism and gout are potent causes. Here again **Sal Hepatica** is indicated, owing to its proven value in the treatment of diseases of the uric acid diathesis.

**Sal Hepatica** is a combination of Lithia and Sodium Phosphate with laxative salts similar to those found in the most famous European bitter and purgative waters. The action of the salts held in solution in the "bitter waters" is too well known to demand specific elucidation, but their remedial value is considerably enhanced by the addition of lithia and sodium phosphate.

Reprint from The Journal of Dental Science on the Treatment of **Pyorrhea Alveolaris**:

"**Pyorrhea alveolaris** is one of the hardest diseases to control that comes before the dental practitioner. Many consider it a local disease, dependent upon some micro-organism; others consider it as arising from constitutional disturbances. It certainly depends upon both conditions as curative factors. Some constitutional disturbances prepare the way for the micro-organism. Local deposits assist in destroying the surrounding tissue; but this of itself could not produce **pyorrhea**, as in some cases we have very little foreign substance upon the roots of the teeth. Sometimes the gum appears in almost normal condition, but far up under the gum we find the alveolar process gradually wasting away, caused by some destructive element. Again, we find little granulations of lime salt upon the roots of teeth, irritating the gum and surrounding tissue, causing swelling and sloughing of the parts. This local disturbance alone is not the cause of **pyorrhea**.

"A deposit of tartar around the teeth is not **pyorrhea alveolaris**; it can be removed or treated locally. Without systemic treatment true **pyorrhea** cannot be cured, especially if a gouty diathesis due to abundance of uric acid or low vitality is present. In my observation I find such symptoms existing.

"After all deposits have been removed and the gums properly treated, I administer **Sal Hepatica**, from one to two teaspoonfuls (according to condition of patient), dissolved in a tumblerful of water, each morning about thirty minutes before breakfast. It is an effervescent, saline laxative and uric acid solvent. I have had wonderful success with the above treatment."



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IODEX is specially prepared for use of the Dental and Medical profession and is resublimed Iodine in a neutral base and contains 5% of Iodine, therapeutically free.

IODEX is powerfully absorbent, stimulates mucous surfaces, greatly increases gland secretions and rapidly reduces inflammation.

Rub gently into the skin until color disappears.

THIRTY-FIVE CENTS THE JAR

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## Glyco-Thymoline

IS INDICATED WHEREVER  
THE ORAL SECRETIONS  
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In Pyorrhea, Alveolar Abscess, Spongy Gums, Chronic Ulceration, Abscessed Antrum, and all Abnormal conditions of the mouth the **Alkaline Antiseptic** treatment cannot be too strongly advocated.

### SPECIAL OFFER

This Sprinkle Top Bracket Bottle, together with samples for your patients, will be sent free to any dentist mentioning this journal.

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**The Alkaline Antiseptic**





# Soldered In Pin Teeth

are superior to baked-in pin teeth because the pins have better opportunities to resist stress.

That explains, in part, why

## Twentieth Century Teeth and Solila Teeth

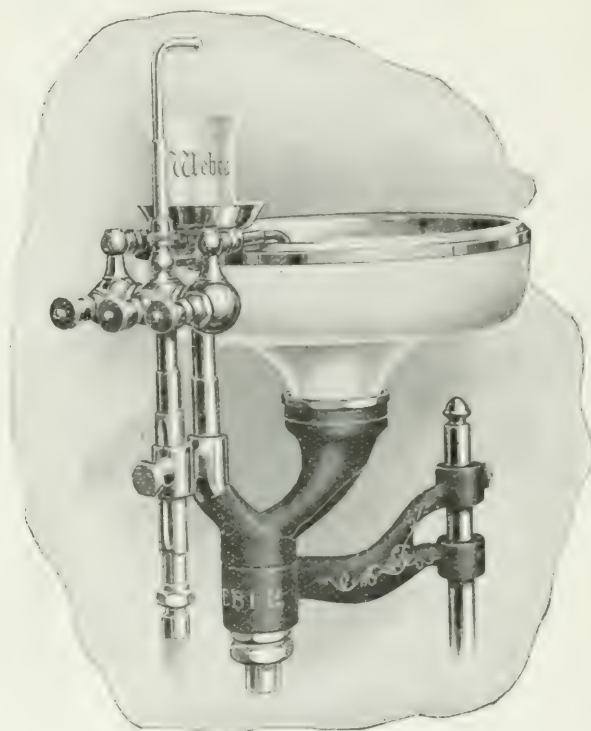
render better service than other vulcanite pin teeth.

If you insist on being supplied with these teeth, you will receive the best service possible from vulcanite teeth.

Order of your dealer.







## THE "WEBER FORTY"

The Most Beautiful and Substantial Cuspidor Made.

BLOWN LEAD GLASS BOWL WITH NO CREASES OR LAPS.

Requires less than one-half the amount of water  
to operate than any other fountain cuspidor.

**WILL NOT OVERFLOW**

All secretions dropped into the bowl are carried  
out the shortest possible route to the sewer, and  
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:: NO LEAKY VALVES TO CONTEND WITH ::

# The Weber Dental Mfg. Company

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The World's Largest Manufacturers of Fountain Cuspidors

Write for Catalogue descriptive of the Weber Fountain Cuspidors  
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That means that the life of pulps is not endangered. The small percentage of solid causes the primary setting, while the secondary or final setting is the same in nature as in Portland Cement.

To secure a liquid with a minimum of acid that will cause proper crystallization requires a delicate balance between the several elements in the liquid. Therefore, the liquid bottles must be securely capped that no element may escape through evaporation.

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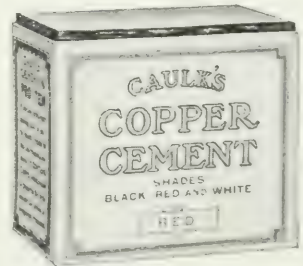
Most dentists have long been familiar with Caulk's Copper Cement (Black). They know its sedative and preservative properties, its tenacity and endurance.

In the introduction of White Copper we do not wish to displace Black Copper; we merely present a cement of a less objectionable color than the old material.

We call attention to the fact that in any form the tendency of Copper is to discolor. For this reason we do not advise its use in the anterior teeth.

But our WHITE COPPER CEMENT in most mouths will change shade but slightly, and is in appearance far preferable to the usual copper cements.

It isn't all copper, but contains zinc specially prepared to make the combination most happy.



Actual bacteriological tests have proved that a percentage of copper in a cement gives the same sedative and germicidal effect as one that is all copper, and thus the objectionable features of a copper cement are largely overcome.

The tenacity of this cement is very great and its strength and endurance are remarkable.

If not using it, write for a sample.

Caulk's Copper Cement is also made in shades of Red and Black. Per package \$1.50.

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# TANOX

Tanox is a reliable remedy for all forms of abscessed or putrescent teeth in from one to three treatments. It forms an antiseptic dressing over the walls of the root canals, which operating incessantly, promptly relieves most stubborn cases.

Tanox is a powder and a liquid. The powder contains the astringents, such as Tannic Acid and purified Alum, strong antiseptics as Thymol, with an oxide base. The liquid contains strong antiseptics and germicides as Formaldehyde, Creosote, and Carbolic Acid.

These when mixed in small sufficient quantities make a creamy paste which may be easily forced to the apex of the root.

It remains continuously active. After it hardens it is not soluble in the fluids of the mouth. It can be safely sealed in an abscessed or putrescent tooth. For these reasons it is reliable for the purpose for which it is intended.

Tanox is reliable for permanent root-canal fillings. Sealed in a canal its curative gases permeate even a tortuous course to the extreme point.

*Tanox can be softened at any time by the application of Tanox Liquid, when it can be easily removed.*

Tanox is a wonderful preparation for mummifying the pulp and has been used with great success.

Tanox is for sale by prominent depots. If your dealer will not supply you, order direct and write us his name.

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**I tell You the  
Comfort of Your  
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the uppermost consideration when you make a plate for him.

You should make it strong and durable.

You should make it thin, so that he has no trouble articulating.

You should make it of a material that won't heat up the tissues covered by the plate and cause inflammation.

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**"Golddust" Rubber**

*Trade Mark Registered*

is the one plate Rubber that combines all these requirements.

Patients who have worn dentures made of "Golddust" Rubber, and others who have heard of it, always demand "Golddust."

"Satisfied patients is the desire and aim of every good dentist.

Use "Golddust" Rubber and notice the increase of satisfaction among your patients.

Send for special pamphlets on "Golddust" Rubber.

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LABORATORY SPECIALISTS IN CROWN AND  
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## STEELE FACINGS



We are now using **Steele Facings** quite extensively in Crown and Bridge Work, and have made the Special Price of

**\$2.75** PER TOOTH  
For the  
Finished Piece

We use Gold Backings for Anteriors, and Porcelain Posteriors with P. A. Backings. A record is kept of the mould we use and in event of fracture we can supply a new facing without delay.

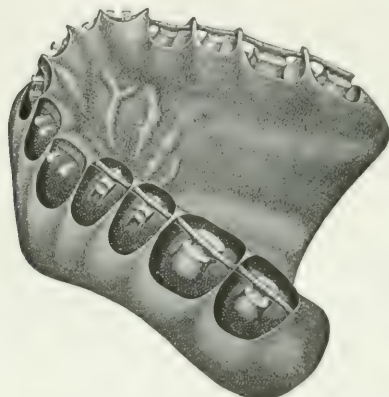
Send along your next case & try the New Steele Facings

# C. L. DALY

X.L.C.R. DENTAL LABORATORY

11 @ 13 Grenville St., Toronto, Ont.

# S. S. WHITE "COMBINATION SETS" FOR VULCANITE



So-called because each set combines teeth with two forms of attachment,---Platinum-Pin Fronts and Diatoric Backs.

With the attachment that platinum pins make, all dentists are familiar; they know it is there to stay.

**S. S. White Diatoric Teeth** are strongly individualized, their means of attachment as sure as platinum pins,---a keying and bolting of the vulcanite itself, inside, through and around the porcelain.

This combination is the shield of the prosthetic dentist, his guard against imposition in the name of economy (save the mark!), an assurance that the teeth will not fail him or his patient.

Send for our Catalog of Porcelain Teeth.

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**THE S. S. WHITE DENTAL MFG. CO.**

CANADIAN BRANCHES

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# WHY A "BALANCED" ALLOY?

Because balancing is the only means so far approved as assuring the reliability of the alloy, which involves the stability of the filling.

Reliability in an alloy means that when it is mixed with the proper proportion of mercury, the resulting amalgam shall not shrink from the walls, nor expand unduly when placed in the cavity. To produce this result balancing is resorted to, eliminating contraction absolutely.

Theoretically there should be no expansion, but contraction is so much worse that what is called a "balanced" alloy is given a very slight degree of expansion. This expansion should not exceed  $\frac{3}{10,000}$  of an inch (or 3 points) in the standardized filling used in testing, which is larger than any filling placed in a tooth. This expansion helps the amalgam to fit the walls closer, makes the filling moisture-tight.

**True Dentalloy** is a "balanced," high silver-tin alloy; has no contraction, but has that almost infinitesimal initial expansion which is good for the filling, and thereafter remains unchanged. It is reliable because it makes a stable filling, and its price is low.

In screw-cap 1-oz. bottles

True Dentalloy .....	per oz.	\$1.50
" " in 5-oz. lot.....	"	1.40
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## Finishing Fillings

**S. S. White Perfection Polishing Strips** are thin, tough, durable; the powder sticks till it is worn away with work. And with them you can do every part of the finishing process: **Garnet**, very coarse; **Emery**, coarse, — where considerable cutting is to be done; **Carborundum**, medium, and **Flint**, fine, — for smoothing off the filling for the final finishing with **Lava**, still finer and **Cuttlefish**, finest of all.

The Cuttlefish is a new addition to the list, — finer than our well known Lava, for those who like to put a high polish on the filling.

You can mix the use of these Strips up as you please, remembering only the general ideas above indicated, and they will always give satisfaction.

Made in two widths, narrow  $\frac{1}{8}$  inch, wide  $\frac{3}{16}$  inch, 6 inch lengths. In boxes of 1 gross, separately and assorted. *Per Box 50c.*

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THE S. S. WHITE DENTAL MFG. CO.

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When writing advertisers mention Oral Health



Justi's  
True-to-Nature Teeth

ANTERIORS

POSTERIORS

The high standard of QUALITY of all JUSTI products, is demonstrated in these new molds.

Perfect occlusion

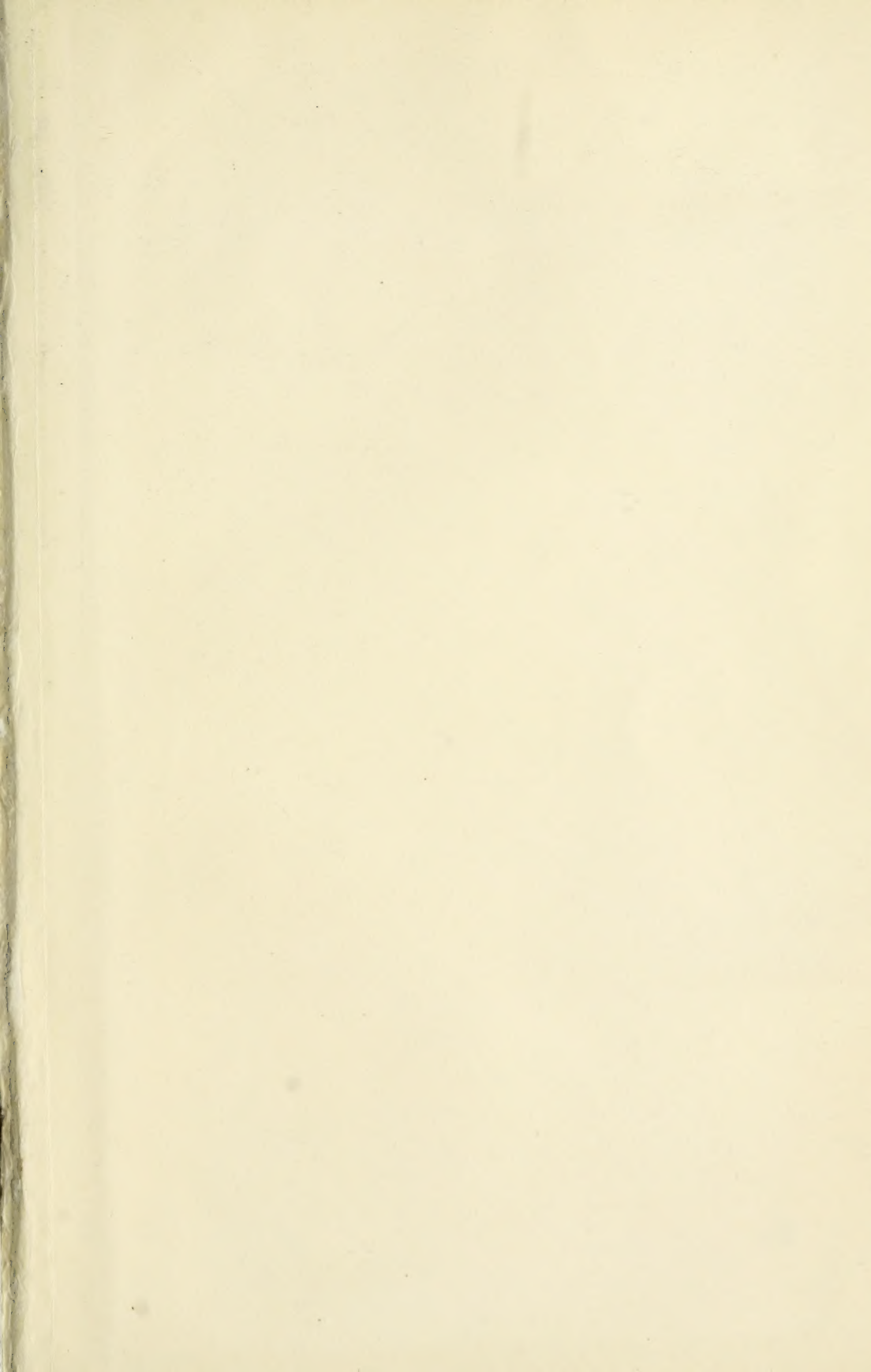
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